



ELISHA KENT KANE M.D., U.S.N.

E. K. Kane

ARCTIC EXPLORATIONS:

The Second Grinnell Expedition

IN SEARCH OF

SIR JOHN FRANKLIN,

1853, '54, '55.

BY

ELISHA KENT KANE, M.D., U.S.N.

LONDON:

NELSON AND SONS, PATERNOSTER ROW;

EDINBURGH AND NEW YORK.

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E. H. Kline

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PREFACE.

THIS book is not a record of scientific investigations. While engaged, under the orders of the Navy Department, in arranging and elaborating the results of the late Expedition to the Arctic Seas, I have availed myself of the permission of the Secretary to connect together the passages of my journal that could have interest for the general reader, and to publish them as a narrative of the adventures of my party. I have attempted very little else.

The Engravings with which the work is illustrated will add greatly to any value the text may possess. Although largely, and, in some instances exclusively, indebted for their interest to the skill of the artist, they are, with scarcely an exception, from sketches made on the spot.

E. K. K.

PHILADELPHIA, *July 4, 1856.*

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KANE'S ARCTIC EXPLORATIONS.

CHAPTER I.

ORGANIZATION—PLAN OF OPERATIONS—COMPLEMENT—EQUIPMENT—
ST. JOHN'S.

In the month of December 1852, I had the honour of receiving CHAPTER
special orders from the Secretary of the Navy, to "conduct an 1.
expedition to the Arctic Seas in search of Sir John Franklin."

I had been engaged, under Lieutenant De Haven, in the Grinnell Expedition, which sailed from the United States in 1850 on the same errand; and I had occupied myself for some months after our return in maturing the scheme of a renewed effort to rescue the missing party, or at least to resolve the mystery of its fate. A new expedition resolved on. Mr. Grinnell, with a liberality altogether characteristic, had placed the *Advance*, in which I sailed before, at my disposal for the cruise; and Mr. Peabody of London, the generous representative of many American sympathies, had proffered his aid largely toward her outfit. The Geographical Society of New York, the Smithsonian Institution, the American Philosophical Society,—I name them in the order in which they announced their contributions,—and a number of scientific associations and friends of science besides, had come forward to help me; and by their aid I managed to secure a better outfit for purposes of observation than would otherwise have been possible to a party so limited in numbers and absorbed in other objects.

Ten of our little party belonged to the United States Navy, and were attached to my command by orders from the Department;

CHART of the DISCOVERIES by the AMERICAN ARCTIC EXPEDITION

under the command of

D^r ELISEA KENT KANE

in search of

SIR JOHN FRANKLIN

1853-4-5.

The Red Colouring exhibits the Discoveries of the Expedition.

Geographical or Sea Miles

0 10 20 30 40 50 60

British Miles

0 10 20 30 40 50 60

77

78

79

80

87

CRME

Dunsterville P.

C. Faraday

Talbot Inlet

Benca P.

Boger, p. 1

Mittie.

C. Comhorm

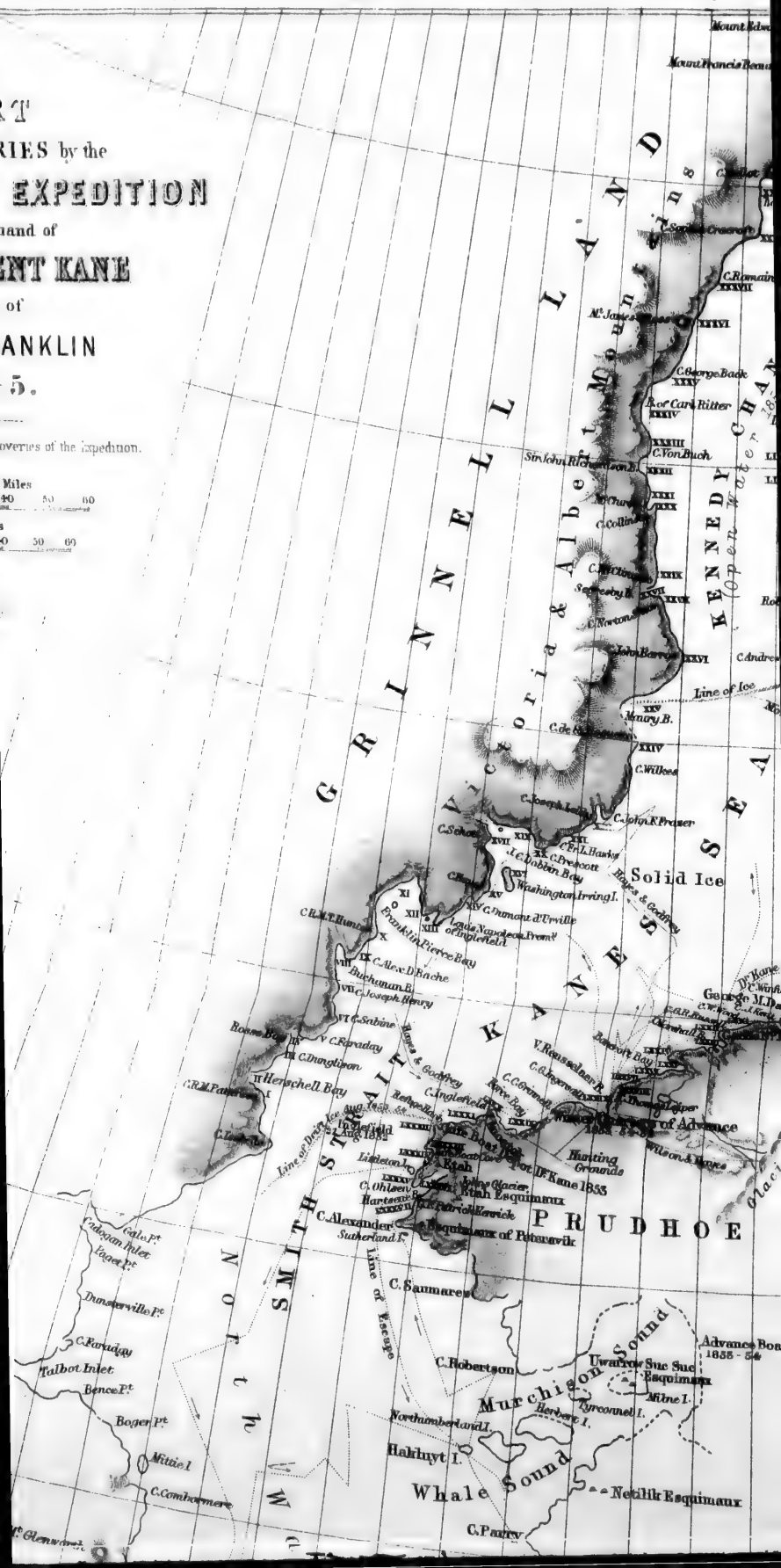
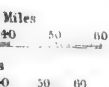
Nº 61

C. B. Borden

Chad Legner

Mr. Webb

overies of the expedition.



50

1

W A S H I N G T O N

Lafayette Bay

Peabody
Bay

Humboldt Glacier

L A N D

Glacier

Boats

Q

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50

45

81

80

79

78

77





Longitude West from Greenwich 65 60 55

SONS, LONDON EDINBURGH & NEW YORK.

Drawn & Eng'd by Bartholomew & Co. Edin.

CHAPTER

I.

Rules and regulations of the expedition.

the others were shipped by me for the cruise, and at salaries entirely disproportioned to their services: all were volunteers. We did not sail under the rules that govern our national ships; but we had our own regulations, well considered and announced beforehand, and rigidly adhered to afterward through all the vicissitudes of the expedition. These included—first, absolute subordination to the officer in command or his delegate; second, abstinence from all intoxicating liquors, except when dispensed by special order; third, the habitual disuse of profane language. We had no other laws.

Plan of the expedition.

I had developed our plan of search in a paper read before the Geographical Society. It was based upon the probable extension of the land-masses of Greenland to the Far North,—a fact at that time not verified by travel, but sustained by the analogies of physical geography. Greenland, though looked upon as a congeries of islands connected by interior glaciers, was still to be regarded as a peninsula, whose formation recognised the same general laws as other peninsulas having a southern trend.

From the alternating altitudes of its mountain ranges, continued without depression throughout a meridional line of nearly eleven hundred miles, I inferred that this chain must extend very far to the north, and that Greenland might not improbably approach nearer the Pole than any other known land.

Proposed route easy from Greenland to far north.

Believing, then, in such an extension of this peninsula, and feeling that the search for Sir John Franklin would be best promoted by a course that might lead most directly to the open sea of which I had inferred the existence, and that the approximation of the meridians would make access to the West as easy from Northern Greenland as from Wellington Channel, and access to the East far more easy,—feeling, too, that the highest protruding headland would be most likely to afford some traces of the lost party,—I named, as the inducements in favour of my scheme,—

1. Terra firma as the basis of our operations, obviating the capricious character of ice-travel.

2. A due northern line, which, throwing aside the influences of terrestrial radiation, would lead soonest to the open sea, should such exist.

3. The benefit of the fan-like abutment of land, on the north face of Greenland, to check the ice in the course of its southern or

equatorial drift, thus obviating the great drawback of Parry in his attempts to reach the Pole by the Spitzbergen Sea. CHAPTER
I.

4. Animal life to sustain travelling parties.

5. The co-operation of the Esquimaux; settlements of these people having been found as high as Whale Sound, and probably extending still further along the coast.

We were to pass up Baffin's Bay, therefore, to its most northern attainable point; and thence, pressing on toward the Pole as far as boats or sledges could carry us, examine the coast-lines for vestiges of the lost party. Line of
route.

All hands counted, we were seventeen at the time of sailing. Another joined us a few days afterward; so that the party under my command, as it reached the coast of Greenland, consisted of— Names of
the party.

HENRY BROOKS, First Officer.

JOHN WALL WILSON,

JAMES M'GARY,

GEORGE RILEY,

WILLIAM MORTON,

CHRISTIAN ØHLSÉN,

HENRY GOODFELLOW,

ISAAC I. HAYES, M.D., Surgeon.

AUGUST SONTAG, Astronomer.

AMOS BONSALE,

GEORGE STEPHENSON,

GEORGE WHIPPLE,

WILLIAM GODFREY,

JOHN BLAKE,

JEFFERSON BAKER,

PETER SCHUBERT,

THOMAS HIOKEY.

Two of these, Brooks and Morton, had been my associates in the first expedition; gallant and trustworthy men, both of them, as ever shared the fortunes or claimed the gratitude of a commander.

The *Advance* had been thoroughly tried in many encounters with the Arctic ice. She was carefully inspected, and needed very little to make her all a seaman could wish. She was a hermaphrodite brig of one hundred and forty-four tons, intended originally for carrying heavy castings from an iron-foundry, but strengthened afterward with great skill and at large expense. She was a good sailer, and easily managed. We had five boats; one of them a metallic life-boat, the gift of the maker, Mr. Francis. The *Ad-
vance*.

Our equipment was simple. It consisted of little else than a quantity of rough boards, to serve for housing over the vessel in winter, some tents of India-rubber and canvas, of the simplest description, and several carefully-built sledges, some of them on a model furnished me by the kindness of the British Admiralty, others of my own devising. The equip-
ment.

- CHAPTER I. Our store of provisions was chosen with little regard to luxury. We took with us some two thousand pounds of well-made pemmican, a parcel of Borden's meat-biscuit, some packages of an exsiccated potato, resembling Edwards's, some pickled cabbage, and a liberal quantity of American dried fruits and vegetables. Besides these, we had the salt beef and pork of the navy ration, hard biscuit, and flour. A very moderate supply of liquors, with the ordinary *et ceteras* of an Arctic cruiser, made up the diet-list. I hoped to procure some fresh provisions in addition before reaching the upper coast of Greenland; and I carried some barrels of malt with a compact apparatus for brewing.
- Wardrobe. We had a moderate wardrobe of woollens, a full supply of knives, needles, and other articles for barter, a large, well-chosen library, and a valuable set of instruments for scientific observations.
- The expedition sails. We left New York on the 30th of May 1853, escorted by several noble steamers; and, passing slowly on to the Narrows amid salutes and cheers of farewell, cast our brig off from the steam-tug and put to sea.
- They reach St. John's. It took us eighteen days to reach St. John's, Newfoundland. The Governor, Mr. Hamilton, a brother of the Secretary of the Admiralty, received us with a hearty English welcome; and all the officials, indeed all the inhabitants, vied with each other in efforts to advance our views. I purchased here a stock of fresh beef, which, after removing the bones and tendons, we compressed into rolls by wrapping it closely with twine, according to the nautical process of *marling*, and hung it up in the rigging.
- After two days we left this thriving and hospitable city; and with a noble team of Newfoundland dogs on board, the gift of Governor Hamilton, headed our brig for the coast of Greenland.
- Deep-sea-soundings in Baffin's Bay. We reached Baffin's Bay without incident. We took deep-sea-soundings as we approached its axis, and found a reliable depth of nineteen hundred fathoms: an interesting result, as it shows that the ridge which is known to extend between Ireland and Newfoundland in the bed of the Atlantic is depressed as it passes further to the north. A few days more found us off the coast of Greenland, making our way toward Fiskernaes.

CHAPTER II.

FISKERNAES—THE FISHERY—MR. LASSEN—HANS CRISTIAN—LICHTENFELS
—SUKKERTOPPEN.

WE entered the harbour of Fiskernaes on the 1st of July, amid CHAPTER
the clamour of its entire population, assembled on the rocks to II.
greet us. This place has an enviable reputation for climate and Fisker-
health. Except perhaps Holsteinberg, it is the driest station upon naes.
the coast; and the springs, which well through the mosses, fre-
quently remain unfrozen throughout the year.¹

The sites of the different Greenland colonies seem to have been Sites of the
chosen with reference to their trading resources. The southern Greenland
posts around Julianshaab and Fredericstahl supply the Danish colonies.
market with the valued furs of the saddle-back seal; Sukkertoppen
and Holsteinberg with reindeer skins; Disco and the northern dis-
tricts with the seal and other oils. The little settlement of Fisker-
naes rejoices in its codfish, as well as the other staples of the upper
coast. It is situated on Fisher's Fiord, some eight miles from the
open bay, and is approached by an island-studded channel of
moderate draught.

We saw the codfish here in all the stages of preparation for the Prepara-
table and the market; the stockfish, dried in the open air, without tion of fish
salt; crapefish, salted and pressed; fresh fish, a *lucus a non* for the
ocendo, as salt as a Mediterranean anchovy: we laid in supplies market.
of all of them. The exemption of Fiskernaes from the continued
frosts, and its free exposure to the winds as they draw up the fiord,
make it a very favourable place for drying cod. The backbone is
cut out, with the exception of about four inches near the tail; the
body expanded and simply hung upon a frame: the head, a luxury
neglected with us, is carefully dried in a separate piece.

Seal and shark oils are the next in importance among the staples Seal and
of Fiskernaes.² The *spec* or blubber is purchased from the natives shark oils
with the usual articles of exchange, generally coffee and tobacco,
and rudely *tried out* by exposure in vats or hot expression in iron
boilers. None of the nicer processes which economy and despatch

CHAPTER
II.Visit to the
official of
the Danish
Company.

have introduced at St. John's seem to have reached this out-of-the-way coast. Even the cod-livers are given to the dogs, or thrown into the general vat.

We found Mr. Lassen, the superintending official of the Danish Company, a hearty, single-minded man, fond of his wife, his children, and his pipe. The visit of our brig was, of course, an incident to be marked in the simple annals of his colony; and, even before I had shown him my official letter from the Court of Denmark, he had most hospitably proffered everything for our accommodation. We became his guests, and interchanged presents with him before our departure; this last transaction enabling me to say, with confidence, that the inner fiords produce noble salmon-trout, and that the reindeer-tongue, a recognised delicacy in the old and new Arctic continents, is justly appreciated at Fiskernaes.

Esqui-
maux
hunter
engaged.

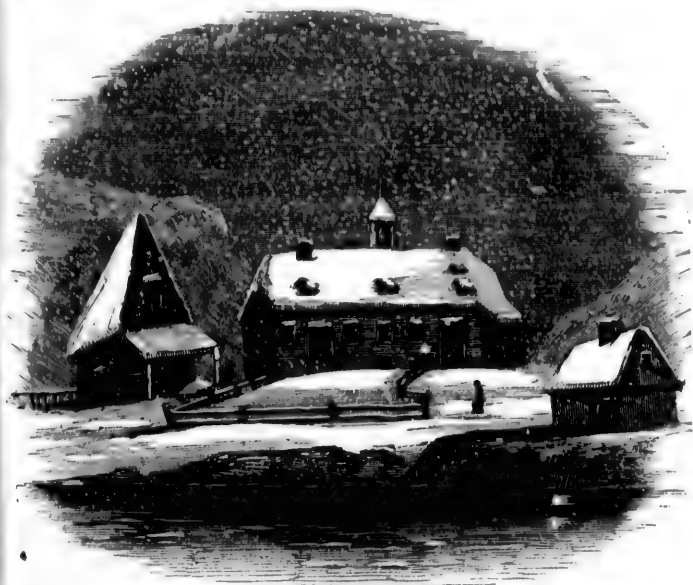
Feeling that our dogs would require fresh provisions, which could hardly be spared from our supplies on shipboard, I availed myself of Mr. Lassen's influence to obtain an Esquimaux hunter for our party. He recommended to me one Hans Cristian, a boy of nineteen, as an expert with the kayak and javelin; and after Hans had given me a touch of his quality by spearing a bird on the wing, I engaged him. He was fat, good-natured, and, except under the excitements of the hunt, as stolid and unimpressible as one of our own Indians. He stipulated that, in addition to his very moderate wages, I should leave a couple of barrels of bread and fifty-two pounds of pork with his mother; and I became munificent in his eyes when I added the gift of a rifle and a new kayak. We found him very useful; our dogs required his services as a caterer, and our own table was more than once dependent on his energies.

Value of
foresight.

No one can know so well as an Arctic voyager the value of foresight. My conscience has often called for the exercise of it, but my habits make it an effort. I can hardly claim to be provident, either by impulse or education. Yet, for some of the deficiencies of our outfit, I ought not, perhaps, to hold myself responsible. Our stock of fresh meats was too small, and we had no preserved vegetables; but my personal means were limited; and I could not press more severely than a strict necessity exacted upon the unquestioning liberality of my friends.

While we were beating out of the fiord of Fiskernaes, I had an

opportunity of visiting Lichtenfels, the ancient seat of the Green- CHAPTER
land congregations, and one of the three Moravian settlements. I ^{11.}
had read much of the history of its founders ; and it was with Lichten-
feelings almost of devotion, that I drew near the scene their labours
had consecrated.^a fols.



MORAVIAN SETTLEMENT OF LICHTENFELS.

As we rowed into the shadow of its rock-embayed cove, every- Moravian
thing was so desolate and still, that we might have fancied brethren
ourselves outside the world of life ; even the dogs—those querulous,
never-sleeping sentinels of the rest of the coast—gave no signal of
our approach. Presently, a sudden turn around a projecting cliff
brought into view a quaint old Silesian mansion, bristling with
irregularly-disposed chimneys, its black, overhanging roof studded
with dormer windows, and crowned with an antique belfry.

We were met, as we landed, by a couple of grave, ancient men
in sab jackets and close velvet skull-caps, such as Vandyke or
Rembrandt himself might have painted, who gave us a quiet, but

CHAPTER

11.

The old
mansion-
house.

Liberal
spirit of
the Mora-
vians.

The "Suk-
kertop."

kindly welcome. All inside of the mansion-house—the furniture, the matron, even the children—had the same time-sobered look. The sanded floor was dried by one of those huge, white-tiled stoves, which have been known for generations in the north of Europe; and the stiff-backed chairs were evidently coeval with the first days of the settlement. The heavy-built table in the middle of the room was soon covered with its simple offerings of hospitality; and we sat around to talk of the lands we had come from, and the changing wonders of the times.

We learned that the house dated back as far as the days of Matthew Stach; built, no doubt, with the beams that floated so providentially to the shore some twenty-five years after the first landing of Egedé; and that it had been the home of the brethren who now greeted us, one for twenty-nine, and the other twenty-seven years. The "Congregation Hall" was within the building, cheerless now with its empty benches; a couple of French horns,—all that I could associate with the gladsome piety of the Moravians,—hung on each side the altar. Two dwelling-rooms, three chambers, and a kitchen, all under the same roof, made up the one structure of Lichtenfels.

Its kind-hearted inmates were not without intelligence and education. In spite of the formal cut of their dress, and something of the stiffness that belongs to a protracted solitary life, it was impossible not to recognise, in their demeanour and course of thought, the liberal spirit that has always characterized their Church. Two of their "children," they said, had "gone to God" last year with the scurvy; yet they hesitated at receiving a scanty supply of potatoes as a present from our store.

We lingered along the coast for the next nine days, baffled by calms and light, adverse winds; and it was only on the 10th of July that we reached the settlement of Sukkertoppen.

The Sukkertop, or Sugar-loaf, a noted landmark, is a wild, isolated peak, rising some 3000 feet from the sea. The little colony which nestles at its base occupies a rocky gorge, so narrow and broken, that a stairway connects the detached groups of huts, and the tide, as it rises, converts a part of the groundplot into a temporary island.

Of all the Danish settlements on this coast, it struck me as the most picturesque. The rugged cliffs seemed to blend with the

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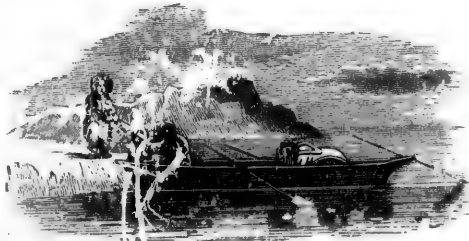
grotesque structures about their base. The trim red and white painted frame mansion, which, in virtue of its green blinds and flagstaff, asserted the gubernatorial dignity at Fiskernaes, was here a lowly, dingy compound of tarred roof and heavy gables. The dwellings of the natives, the natives themselves, and the wild packs of dogs that crowded the beach, were all in keeping. It was after twelve at night when we came into port; and the peculiar light of the Arctic summer at this hour—which reminds one of the effect of an eclipse, so unlike our orthodox twilight—bathed everything in grey but the northern background—an Alpine chain standing out against a blazing crimson sky.

Light at
midnight

Sukkertoppen is a principal dépôt for reindeer-skins; and the natives were at this season engaged in their summer hunt, collecting them. Four thousand had already been sent to Denmark, and more were on hand. I bought a stock of superior quality for fifty cents a piece. These furs are valuable for their lightness and warmth. They form the ordinary upper clothing of both sexes; the seal being used only for pantaloons and for waterproof dresses. I purchased also all that I could get of the crimped seal-skin boots or moccasins, an admirable article of walking gear, much more secure against the wet than any made by sewing. I would have added to my stock of fish, but the cod had not yet reached this part of the coast, and would not for some weeks.

Sukker-
toppen.

Bidding good-bye to the governor, whose hospitality we had shared liberally, we put to sea on Saturday, the 10th, beating to the northward and westward in the teeth of a heavy gale.



QOMIAK, OR WOMEN'S BOAT.

CHAPTER III.

COAST OF GREENLAND—SWARTE-HUK—LAST DANISH OUTPOSTS—MELVILLE BAY—IN THE ICE—BEARS—LEGS—ANCHOR TO A BERG—MIDNIGHT SUNSHINE.

CHAPTER III. THE lower and middle coast of Greenland has been visited by so many voyagers, and its points of interest have been so often described, that I need not dwell upon them. From the time we left Sukkertoppen, we had the usual delays from fogs and adverse currents, and did not reach the neighbourhood of Wilcox Point, which defines Melville Bay, until the 27th of July.

Old friends
at Proven.

On the 16th we passed the promontory of Swartehuk, and were welcomed the next day at Proven by my old friend Christiansen, the superintendent, and found his family much as I left them three years before. Frederick, his son, had married a native woman, and added a summer tent, a half-breed boy, and a Danish rifle to his stock of valuables. My former patient, Anna, had united fortunes with a fat-faced Esquimaux, and was the mother of a chubby little girl. Madame Christiansen, who counted all these and so many others as her happy progeny, was hearty and warm-hearted as ever. She led the household in sewing up my skins into various serviceable garments; and I had the satisfaction, before I left, of completing my stock of furs for our sledge parties.

Reach
Upper-
navik.

While our brig passed, half sailing, half drifting, up the coast, I left her under the charge of Mr. Brooks, and set out in the whale-boat to make my purchases of dogs among the natives. Gathering them as we went along from the different settlements, we reached Upernavik, the resting-place of the Grinnell Expedition in 1851 after its winter drift, and for a couple of days shared, as we were sure to do, the generous hospitality of Governor Flaischer.

Last
Danish
outpost.

Still coasting along, we passed in succession the Esquimaux settlement of Kingatok, the Kettle—a mountain-top so named from the resemblances of its profile—and finally Yotlik, the furthest point of colonization; beyond which, save the sparse headlands of the charts, the coast may be regarded as unknown.

Then, inclining more directly toward the north, we ran close to the Baffin Islands,—clogged with ice when I saw them three years before, now entirely clear,—sighted the landmark which is known as the Horse's Head, and, passing the Duck Islands, where the *Advance* grounded in 1851, bore away for Wilcox Point.⁵

We stood lazily along the coast, with alternations of perfect calm and off-shore breezes, generally from the south or east; but on the morning of the 27th of July, as we neared the entrance of Melville Bay, one of those heavy ice-fogs, which I have described in my former narrative as characteristic of this region, settled around us. We could hardly see across the decks, and yet were sensible of the action of currents carrying us we knew not where. By the time the sun had scattered the mist, Wilcox Point was to the south of us; and our little brig, now fairly in the bay, stood a fair chance of drifting over toward the Devil's Thumb, which then bore east of north. The bergs which infest this region, and which have earned for it among the whalers the title of the "Bergy Hole," showed themselves all around us: we had come in among them in the fog.

It was a whole day's work, towing with both boats; but toward evening we had succeeded in crawling off shore, and were doubly rewarded for our labour with a wind. I had observed with surprise, while we were floating near the coast, that the land ice was already broken and decayed; and I was aware, from what I had read, as well as what I had learned from whalers and observed myself of the peculiarities of this navigation, that the in-shore track was in consequence beset with difficulty and delays. I made up my mind at once. I would stand to the westward until arrested by the pack, and endeavour to *double* Melville Bay by an outside passage. A chronicle of this transit, condensed from my log-book, will have interest for navigators:—

"*July 28, Thursday, 6 A.M.*—Made the offsetting streams of the pack, and bore up to the northward and eastward; heading for Cape York in tolerably free water.

"*July 29, Friday, 9½ A.M.*—Made loose ice, and very rotten; the tables nearly destroyed, and much broken by wave action: water-sky to the northward. Entered this ice, intending to work to the northward and eastward, above or about Sabine Islands, in search of the north-eastern land-ice. The breeze freshened off

CHAPTER
III.

Melville
Bay.

Among
the bergs

Doubling
Melville
Bay.

CHAPTER
III.Breaking
of an ice-
berg.

shore, breaking up and sending out the floes, the leads rapidly closing. Fearing a besetment, I determined to fasten to an ice-berg; and after eight hours of very heavy labour, warping, heaving, and planting ice-anchors, succeeded in effecting it.

"We had hardly a breathing spell, before we were startled by a set of loud, crackling sounds above us; and small fragments of ice, not larger than a walnut, began to dot the water like the first drops of a summer shower. The indications were too plain; we had barely time to cast off before the face of the berg fell in ruins, crashing like near artillery.



FASTENED TO AN ICEBERG.

A critical
position.

"Our position, in the mean time, had been critical, a gale blowing off the shore, and the floes closing and scudding rapidly. We lost some three hundred and sixty fathoms of whale line, which were caught in the floes, and had to be cut away to release

us from the drift. It was a hard night for boat-work, particularly with those of the party who were taking their first lessons in floe navigation. CHAPTER
III.

"*July 30, Saturday.*—Again moored alongside of an iceberg. The wind off shore, but hauling to the southward, with much free water.

"12 M.—The fog too dense to see more than a quarter of a mile a head; occasional glimpses through it show no practicable leads. Land to the north-east very rugged; I do not recognise its marks. Two lively bears seen about 2 A.M. The 'Red Boat,' ^B *seen.* with Petersen and Hayes, got one; I took one of the quarter-boats, and shot the other.

"Holding on for clearer weather.

"*July 31, Sunday.*—Our open water beginning to fill up very fast with loose ice from the south, went around the edges of the lake in my gig, to hunt for a more favourable spot for the brig; and, after five hours' hard heaving, we succeeded in changing our fasts to another berg, quite near the free water. In our present position, the first change must, I think, liberate us. In one hour after we reached it, the place we left was consolidated into pack. We now lie attached to a low and safe iceberg, only two miles from the open sea, which is rapidly widening toward us under the influence of the southerly winds. Anchor to
an iceberg.

"We had a rough time in working to our present quarters, in what the whalers term an open hole. We drove into a couple of bergs, carried away our jib-boom and shrouds, and destroyed one of our quarter-boats.

"*August 1, Monday.*—Beset thoroughly with drifting ice, small rotten floe-pieces. But for our berg, we would now be carried to the south; as it is, we drift with it to the north and east. In the ice.

"2 A.M.—The continued pressure against our berg has begun to affect it; and, like the great floe all around us, it has taken up its line of march toward the south. At the risk of being entangled, I ordered a light line to be carried out to a much larger berg, and, after four hours' labour, made fast to it securely. This berg is a moving breakwater, and of gigantic proportions; it keeps its course steadily toward the north, while the loose ice drifts by on each side, leaving a wake of black water for a mile behind us.

"Our position last night, by midnight altitude of the sun, gave

CHAPTER III. **US** $75^{\circ} 27'$; to-day at noon, with a more reliable horizon, we made $75^{\circ} 37'$; showing that, in spite of all embarrassments, we still move to the north. We are, however, nearer than I could wish to the land,—a blank wall of glacier.

“About 10 P.M. the immediate danger was past; and, espying a lead to the north-east, we got under weigh, and pushed over in spite of the drifting trash. The men worked with a will, and we bored through the floes in excellent style.”

Midnight
sunshine.

On our road we were favoured with a gorgeous spectacle, which hardly any excitement of peril could have made us overlook. The midnight sun came out over the northern crest of the great berg, our late “fast friend,” kindling variously-coloured fires on every part of its surface, and making the ice around us one great resplendency of gemwork, blazing carbuncles, and rubies and molten gold.



ESQUIMAUX BOY ON DOG.

CHAPTER IV.

BORING THE FLOES—SUCCESSFUL PASSAGE THROUGH MELVILLE BAY—ICE
NAVIGATION—PASSAGE OF THE MIDDLE PACK—THE NORTH WATER.

OUR brig went crunching through all this jewellery; and, after a tortuous progress of five miles, arrested here and there by tongues which required the saw and ice-chisels, fitted herself neatly between two floes. Here she rested till toward morning, when the leads opened again, and I was able, from the crow's-nest, to pick our way to a larger pool some distance ahead. In this we beat backward and forward, like China fish seeking an outlet from a glass jar, till the fog caught us again; and so the day ended.

"August 3, Wednesday.—The day did not promise well; but as the wind was blowing in feeble airs from the N.N.W., I thought it might move the ice, and sent out the boats for a tow. But, after they had had a couple of hours of unprofitable work, the breeze freshened, and the floes opened enough to allow us to beat through them. Everything now depended upon practical ice knowledge; and, as I was not willing to trust any one else in selecting the leads for our course, I have spent the whole day with M^r Gary at mast-head,—a somewhat confined and unfavourable preparation for a journal entry.

"I am much encouraged, however; this off-shore wind is favourable to our escape. The icebergs, too, have assisted us to hold our own against the rapid passage of the broken ice to the south; and since the larger floes have opened into leads, we have nothing to do but to follow them carefully and boldly. As for the ice-necks, and prongs, and rafts, and tongues, the capstan and windlass have done a great deal to work us through them; but a great deal more, a brave headway and our little brig's hard head of oak.

"Midnight.—We are clear of the bay and its myriads of discouragements. The North Water, our highway to Smith's Sound, is fairly ahead.

"It is only eight days ago that we made Wilcox Point, and even since we fairly left the inside track of the whalers, and made

CHAPTER
IV.
Boring the
floes.

Prospect
of escape.

Clear of
the bay.

CHAPTER
IV.Ice in Mel-
ville Bay.

our push for the west. I did so, not without full consideration of the chances. Let me set down what my views were and are."

The indentation known as Melville Bay is protected by its northern and north-eastern coast from the great ice and current drifts which follow the axis of Baffin's Bay. The interior of the country which bounds upon it is the seat of extensive glaciers, which are constantly shedding off icebergs of the largest dimensions. The greater bulk of these is below the water-line, and the depth to which they sink when floating subjects them to the action of the deeper sea currents, while their broad surface above the water is of course acted on by the wind. It happens, therefore, that they are found not unfrequently moving in different directions from the floes around them, and preventing them for a time from freezing into a united mass. Still, in the late winter, when the cold has thoroughly set in, Melville Bay becomes a continuous field of ice, from Cape York to the Devil's Thumb.

On the return of milder weather, the same causes renew their action; and that portion of the ice which is protected from the outside drift, and entangled among the icebergs that crowd the bay, remains permanent long after that which is outside is in motion. Step by step, as the year advances, its outer edge breaks off; yet its inner curve frequently remains unbroken through the entire summer. This is the "fast ice" of the whalers, so important to their progress in the earlier portions of the season; for, however it may be encroached upon by storms or currents, they can generally find room to *track* their vessels along its solid margin; or if the outside ice, yielding to off-shore winds, happens to recede, the interval of water between the fast and the drift allows them not unfrequently to use their sails.

Ice navi-
gation.

It is therefore one of the whalers' canons of navigation, which they hold to most rigidly, to follow the shore. But it is obvious that this applies only to the early periods of the Arctic season, when the land ice of the inner bay is comparatively unbroken, as in May or June, or part of July, varying of course with the circumstances. Indeed, the bay is seldom traversed except in these months, the north-west fisheries of Pond's Bay, and the rest, ceasing to be of value afterward. Later in the summer, the inner ice breaks up into large floes, moving with wind and tide, that embarrass the navigator, misleading him into the notion that he is

attached to his "fast," when in reality he is accompanying the movements of an immense floating ice-field.

I have been surprised sometimes that our national ships of discovery and search have not been more generally impressed by these views. Whether the season has been mild or severe, the ice fast and solid, or broken and in drift, they have followed in August the same course which the whalers do in June, running their vessels into the curve of the bay in search of the fast ice which had disappeared a month before, and involving themselves in a labyrinth of floes. It was thus the *Advance* was caught in her second season, under Captain de Haven; while the *Prince Albert*, leaving us, worked a successful passage to the west. So too the *North Star* in 1849 was carried to the northward, and hopelessly entangled there. Indeed, it is the common story of the disasters and delays that we read of in the navigation of these regions.

Now I felt sure, from the known openness of the season of 1852 and the probable mildness of the following winter, that we could scarcely hope to make use of the land ice for tracking, or to avail ourselves of leads along its margin by canvas. And this opinion was confirmed by the broken and rotten appearance of the floes during our coastwise drift at the Duck Islands. I therefore deserted the inside track of the whalers, and stood to the westward, until we made the first streams of the middle pack; and then, skirting the pack to the northward, headed in slowly for the middle portion of the bay above Sabine Islands. My object was to double, as it were, the loose and drifting ice that had stood in my way, and, reaching Cape York, as nearly as might be, trust for the remainder of my passage to warping and tracking by the heavy floes. We succeeded, not without some laborious boring and serious risks of entanglement among the broken icefields. But we managed, in every instance, to combat this last form of difficulty by attaching our vessel to large icebergs, which enabled us to hold our own, however swiftly the surface floes were pressing by us to the south. Four days of this scarcely varied yet exciting navigation brought us to the extended fields of the pack, and a fortunate north-wester opened a passage for us through them. We are now in the North Water.⁶

CHAPTER

IV.

Common mistakes in ice navigation.

Passage of the middle pack.

CHAPTER V.

CRIMSON CLIFFS OF BEVERLEY—HAKLUYT AND NORTHUMBERLAND—RED SNOW—THE GATES OF SMITH'S STRAITS—CAPE ALEXANDER—CAPE HATHERTON—FAREWELL CAIRN—LIFE-BOAT DEPÔT—ESQUIMAUX RUINS FOUND—GRAVES—FLAGSTAFF POINT.

CHAPTER V. My diary continues :—

V.
The Crimson Cliffs.

"We passed the 'Crimson Cliffs' of Sir John Ross in the forenoon of August 5th. The patches of red snow, from which they derive their name, could be seen clearly at the distance of ten miles from the coast. It had a fine deep rose hue, not at all like the brown stain which I noticed when I was here before. All the gorges and ravines in which the snows had lodged were deeply tinted with it. I had no difficulty now in justifying the somewhat poetical nomenclature which Sir John Franklin applied to this locality; for if the snowy surface were more diffused, as it is no doubt earlier in the season, crimson would be the prevailing colour.

Pass Conical Rock.

"Late at night we passed Conical Rock, the most insulated and conspicuous landmark of this coast; and, still later, Wolstenholme and Saunder's Islands, and Oomenak, the place of the *North Star's* winter-quarters—an admirable day's run; and so ends the 5th of August. We are standing along, with studding-sails set, and open water before us, fast nearing our scene of labour. We have already got to work, sewing up blanket bags and preparing sledges for our campaignings on the ice."

Reach Hakluyt Island.

We reached Hakluyt Island in the course of the next day. A tall spire on it, probably of gneiss, rises 600 feet above the water-level, and is a valuable landmark for very many miles around. We were destined to become familiar with it before leaving this region. Both it and Northumberland, to the south-east of it, afforded studies of colour that would have rewarded an artist.

Red snow.

The red snow was diversified with large surfaces of beautifully green mosses and alopecurus,⁷ and where the sandstone was bare it threw in a rich shade of brown.

The coast to the north of Cape Atholl is of broken greenstone, in terraces. Nearing Hakluyt Island, the truncated and pyramidal shapes of these rocks may still be recognised in the interior; but the coast presents a coarse red sandstone, which continues well characterized as far as Cape Saumarez. The nearly horizontal strata of the sandstone thus exhibited contrast conspicuously with the snow which gathers upon their exposed ledges. In fact, the parallelism and distinctness of the lines of white and black would have dissatisfied a lover of the picturesque. Porphyritic rocks, however, occasionally broke their too great uniformity; occasionally, too, the red snow showed its colours; and at intervals of very few miles—indeed, wherever the disrupted masses offered a passage-way—glaciers were seen descending toward the water's edge. All the back country appeared one great rolling distance of glacier.

"August 6. *Saturday*.—Cape Alexander and Cape Isabella, the headlands of Smith's Sound, are now in sight; and, in addition to these indications of our progress toward the field of search, a marked swell has set in after a short blow from the northward, just such as might be looked for from the action of the wind upon an open water-space beyond.

"Whatever it may have been when Captain Inglefield saw it a year ago, the aspect of this coast is now most uninviting." As we look far off to the west, the snow comes down with heavy uniformity to the water's edge, and the patches of land seem as rare as the summer's snow on the hills about Sukkertoppen and Fiskernaes. On the right we have an array of cliffs, whose frowning grandeur might dignify the entrance to the proudest of southern seas. I should say they would average from 400 to 500 yards in height, with some of their precipices 800 feet at a single leap. They have been until now the Arctic pillars of Hercules; and they look down on us as if they challenged our right to pass. Even the sailors are impressed as we move under their dark shadow. One of the officers said to our look-out, that the gulls and other birds that dot the water about us were as enlivening as the white hills of the Mediterranean. 'Yes, sir,' he rejoined with sincere avowal; 'yes, sir, in proportion to their size.'

"August 7, *Sunday*.—We have left Cape Alexander to the south; and Littleton Island is before us, hiding Cape Hatherton, the latest

CHAPTER
V.
Geology of
the coast.

The gates
of Smith's
Sound.

Aspect of
the coast.

CHAPTER

V.

Smith's
Sound.

of Captain Inglefield's positively-determined headlands. We are fairly inside of Smith's Sound.

"On our left is a capacious bay; and deep in its north-eastern recesses we can see a glacier issuing from a fiord."

We knew this bay familiarly afterwards as the residence of a body of Esquimaux with whom we had many associations; but we little dreamt then that it would bear the name of a gallant friend, who found there the first traces of our escape. A small cluster of rocks, hidden at times by the sea, gave evidence of the violent tidal action about them.

"As we neared the west end of Littleton Island, after breakfast this morning, I ascended to the crow's-nest, and saw to my sorrow the ominous blink of ice ahead." The wind has been freshening for a couple of days from the northward, and if it continues, it will bring down the flocs on us.

"My mind has been made up from the first that we are to force our way to the north, as far as the elements will let us; and I feel the importance, therefore, of securing a place of retreat, that in case of disaster we may not be altogether at large. Besides, we have now reached one of the points at which, if any one is to follow us, he might look for some trace to guide him."

Cairn on
Littleton
Island.

I determined to leave a cairn on Littleton Island, and deposit a boat with a supply of stores in some convenient place near it. One of our whale-boats had been crushed in Melville Bay, and Francis's metallic life-boat was the only one I could spare. Its length did not exceed twenty feet, and our crew of twenty could hardly stow themselves in it with even a few days' rations; but it was air-chambered and buoyant.

Selecting from our stock of provisions and field equipage such portions as we might by good luck be able to dispense with, and adding with reluctant liberality some blankets and a few yards of india-rubber cloth, we set out in search of a spot for our first dépôt. It was essential that it should be upon the mainland, for the rapid tides might so wear away the ice as to make an island inaccessible to a foot-party; and yet it was desirable that, while secure against the action of sea and ice, it should be approachable by boats. We found such a place after some pretty cold rowing. It was off the north-east cape of Littleton, and bore S.S.E. from Cape Hatherton, which loomed in the distance above the fog

Here we buried our life-boat with her little cargo. We placed along her gunwale the heaviest rocks we could handle, and, filling up the interstices with smaller stones and sods of andromeda and moss, poured sand and water among the layers. This, frozen at once into a solid mass, might be hard enough, we hoped, to resist the claws of the polar bear.

CHAPTER
V.
Life-boat
and cargo
buried.

We found to our surprise that we were not the first human beings who had sought a shelter in this desolate spot. A few ruined walls here and there showed that it had once been the seat of a rude settlement; and in the little knoll which we cleared away to cover in our storehouse of valuables, we found the mortal remains of their former inhabitants.

Nothing can be imagined more sad and homeless than these memorials of extinct life. Hardly a vestige of growth was traceable on the bare ice-rubbed rocks; and the huts resembled so much the broken fragments that surrounded them, that at first sight it was hard to distinguish one from the other. Walrus bones lay about in all directions, showing that this animal had furnished the staple of subsistence. There were some remains, too, of the fox and the narwhal; but I found no signs of the seal or reindeer.

Ruins of a
rude settle-
ment.

These Esquimaux have no mother earth to receive their dead, but they seat them as in the attitude of repose, the knees drawn close to the body, and enclose them in a sack of skins. The implements of the living man are then grouped around him; they are covered with a rude dome of stones, and a cairn is piled above. This simple cenotaph will remain intact for generation after generation. The Esquimaux never disturb a grave.

Esqui-
maux.
cairn.

From one of the graves I took several perforated and rudely-fashioned pieces of walrus ivory, evidently part of sledge and lance gear. But wood must have been even more scarce with them than with the natives of Baffin's Bay north of the Melville glacier. We found, for instance, a child's toy spear, which, though elaborately tipped with ivory, had its wooden handle pieced out of four separate bits, all carefully patched and bound with skin. No piece was more than six inches in length or half an inch in thickness.

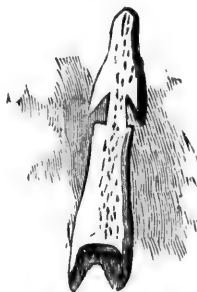
We found other traces of Esquimaux, both on Littleton Island and in Shoal-Water Cove, near it. They consisted of huts, graves, traces of deposit for meat, and rocks arranged as foxtraps. These

Traces of
Esqui-
maux.

CHAPTER V. were evidently very ancient ; but they were so well preserved that it was impossible to say how long they had been abandoned there, whether for fifty or a hundred years before.



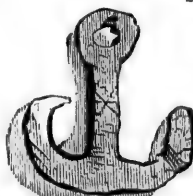
Child's Spear.



Bone Spear Head.



Sewing Implements.



Pot Hook.

ESQUIMAUX IMPLEMENTS, FROM GRAVES.

Erection of
a beacon
over the
cairn

Our stores deposited, it was our next office to erect a beacon, and intrust to it our tidings. We chose for this purpose the Western Cape of Littleton Island, as more conspicuous than Cape Hatherton ; built our cairn ; wedged a staff into the crevices of the rocks ; and, spreading the American flag, hailed its folds with three cheers as they expanded in the cold midnight breeze. These important duties performed—the more lightly, let me say, for this little flicker of enthusiasm—we rejoined the brig early on the morning of the 7th, and forced on again towards the north, beating against wind and tide.

preserved that
andoned there,

CHAPTER. VI.

CLOSING WITH THE ICE—REFUGE HARBOUR—DOGS—WALRUS—NARWHAL—
ICE—HILLS—BEACON CAIRN—ANCHORED TO A BERG—ESQUIMAUX HUTS
—PETER FORCE BAY—CAPE CORNELIUS GRINNELL—SHALLOWS—A GALE
—THE RECREANT DOGS.

"August 8, Monday.—I had seen the ominous blink ahead of us from the Flagstaff Point of Littleton Island; and before two hours were over we closed with ice to the westward. It was in the form of a pack, very heavy, and several seasons old; but we stood on, boring the loose stream-ice, until we had passed some forty miles beyond Cape Life-Boat Cove. Here it became impossible to force our way further; and a dense fog gathering round us, we were carried helplessly to the eastward. We should have been forced upon the Greenland coast, but an eddy close in shore released us for a few moments from the direct pressure, and we were fortunate enough to get out a whale-line to the rocks, and warp into a protecting niche.

"In the evening I ventured out again with the change of tide, but it was only to renew a profitless conflict. The flood, encountering the southward movement of the floes, drove them in upon the shore, and with such rapidity and force as to carry the smaller bergs along with them. We were too happy, when, after a manful struggle of some hours, we found ourselves once more out of their range.

"Our new position was rather nearer to the south than the one we had left. It was in a beautiful cove, landlocked from east to west, and accessible only from the north. Here we moored our vessel securely by hawsers to the rocks and a whale-line carried out to the narrow entrance. At M'Gary's suggestion, I called it 'Fog Inlet;' but we afterwards remembered it more thankfully as REFUGE HARBOUR.¹⁰

"August 9, Tuesday.—It may be noted among our little miseries that we have more than fifty dogs on board, the majority of whom might rather be characterized as 'ravening wolves.' To



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CHAPTER.
VI.
Ice and
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Escape
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ice.

Refuge
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CHAPTER

VI.

Voracity
of dogs.

feed this family, upon whose strength our progress and success depend, is really a difficult matter. The absence of shore or land ice to the south in Baffin's Bay has prevented our rifles from contributing any material aid to our commissariat. Our two bears lasted the cormorants but eight days; and to feed them upon the meagre allowance of two pounds of raw flesh every other day is an almost impossible necessity. Only yesterday they were ready to eat the caboose up, for I would not give them pemmican. Corn meal or beans, which Penny's dogs fed on, they disdain to touch, and salt junk would kill them.



ESQUIMAUX DOGS.

Walrus
hunt.

"Accordingly I started out this morning to hunt walrus, with which the Sound is teeming. We saw at least fifty of these dusky monsters, and approached many groups within twenty paces; but our rifle balls reverberated from their hides like cork pellets from a pop-gun target, and we could not get within harpoon-distance of one. Later in the day, however, Ohlsen, climbing a neighbouring hill to scan the horizon, and see if the ice had slackened, found the dead carcase of a narwhal or sea-unicorn—a happy discovery, which has secured for us at least six hundred pounds

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of good foetid wholesome flesh. The length of the narwhal was fourteen feet, and his process, or 'horn,' from the tip to its bony encasement, four feet—hardly half the size of the noble specimen I presented to the Academy of Natural Sciences after my last cruise.¹¹ We built a fire on the rocks, and melted down his blubber; he will yield readily two barrels of oil.

"While we were engaged getting our narwhal on board, the wind hauled round to the south-west, and the ice began to travel back rapidly to the north. This looks as if the resistance to the northward was not very permanent. There must be either great areas of relaxed ice or open water leads along the shore. But the choking up of the floes on our eastern side still prevents an attempt at progress. This ice is the heaviest I have seen; and its accumulation on the coast produces barricades more like bergs than hummocks. One of those rose perpendicularly more than sixty feet. Except the 'ice-hills' of Admiral Wrangell, on the coast of Arctic Asia, nothing of ice-upheaval has ever been described equal to this.¹²

"Still anxious beyond measure to get the vessel released, I forced a boat through the drift to a point about a mile north of us, from which I could overlook the Sound. There was nothing to be seen but a melancholy extent of impacted drift, stretching northward as far as the eye could reach. I erected a small beacon-cairn on the point; and, as I had neither paper, pencil, nor pennant, I burnt a K with powder on the rock, and scratching O. K. with a pointed bullet on my cap-lining, hoisted it as the representative of a flag."*

With the small hours of Wednesday morning came a breeze from the south-west, which was followed by such an apparent relaxation of the floes at the slack-water of flood-tide, that I resolved to attempt an escape from our little basin. We soon warped to a narrow *cul-de-sac* between the main pack on one side and the rocks on the other, and after a little trouble made ourselves fast to a berg.

There was a small indentation ahead, which I had noticed on my boat reconnoissance; and, as the breeze seemed to be freshening, I

* It was our custom, in obedience to a general order, to build cairns and leave notices at every eligible point. One of these, rudely marked, much as I have described this one, was found by Captain Hartstene, and, strange to say, was the only direct memorial of my whereabouts communicated from some hundreds of beacons.

CHAPTER
VI.
Narwhal.

Ice-hills.

A beacon
cairn.

Anchored
to a berg.

CHAPTER
VI.

thought we might venture for it. But the floes were too strong for us; our eight-inch hawser parted like a whip-cord. There was no time for hesitation. I crowded sail, and bored into the drift, leaving Mr. Sontag and three men upon the ice. We did not reclaim them till, after some hours of adventure, we brought up under the lee of a grounded berg.

Working
through
the floes.

I pass without notice our successive efforts to work the vessel to seaward through the floes. Each had its somewhat varied incidents, but all ended in failure to make progress. We found ourselves at the end of the day's struggles close to the same imperfectly-defined headland which I have marked on the chart as Cape Cornelius Grinnell, yet separated from it by a barrier of ice, and with our anchors planted in a berg.

In one of the attempts which I made with my boat to detect some pathway or outlet for the brig, I came upon a long rocky ledge, with a sloping terrace on its southern face, strangely green with sedges and peppies. I had learned to refer these unusual traces of vegetation to the fertilizing action of the refuse which gathers about the habitations of men. Yet I was startled, as I walked round its narrow and dreary limits, to find an Esquimaux hut, so perfect in its preservation that a few hours' labour would have rendered it habitable. There were bones of the walrus, fox, and seal, scattered round it in small quantities; a dead dog was found close by, with the flesh still on his bones, and, a little further off, a bear-skin garment that retained its fur. In fact, for a deserted homestead, the scene had so little of the air of desolation about it, that it cheered my good fellows perceptibly.

Esqui-
maux hut.

Scenery on
shore.

The scenery beyond, upon the main shore, might have impressed men whose thoughts were not otherwise absorbed. An opening through the cliffs of trap rock disclosed a valley slope and distant rolling hills,—in fine contrast with the black precipices in front,—and a stream that came tumbling through the gorge; we could hear its pastoral music even on board the brig, when the ice clamour intermitted.

The water around was so shoal that at three hundred yards from the shore we had but twelve-foot soundings at low tide. Great rocks, well worn and rounded, that must have been floated out by the ice at some former period, rose above the water at a half mile's distance, and the inner drift had fastened itself about them in

fantastic shapes. The bergs, too, were aground well out to seaward; and the cape ahead was completely packed with the ice which they hemmed in. Tied up as we were to our own berg, we were for the time in safety, though making no progress; but to cast loose and tear out into the pack was to risk progress in the wrong direction.

"August 12, *Friday*.—After careful consideration, I have determined to try for a further northing, by following the coast-line. At certain stages of the tides—generally from three-quarters flood to the commencement of the ebb—the ice evidently relaxes enough to give a partial opening close along the land. The strength of our vessel we have tested pretty thoroughly; if she will bear the frequent groundings that we must look for, I am persuaded we may seek these openings, and warp along them from one lump of grounded ice to another. The water is too shoal for ice masses to float in that are heavy enough to make a nip very dangerous. I am preparing the little brig for this novel navigation, clearing her decks, securing things below with extra lashings, and getting out spars, to serve in case of necessity as shores to keep her on an even keel.

Sailing
along the
coast line.

"August 13, *Saturday*.—As long as we remain entangled in the wretched shallows of this bight, the long, precipitous cape ahead may prevent the north wind from clearing us; and the nearness of the cliffs will probably give us squalls and flaws. Careful angular distances taken between the shore and the chain of bergs to seaward show that these latter do not budge with either wind or tide. It looks as if we were to have a change of weather. Is it worth another attempt to warp out and see if we cannot double these bergs to seaward? I have no great time to spare; the young ice forms rapidly in quiet spots during the entire twenty-four hours.

Entangled
in the
shallows.

"August 14, *Sunday*.—The change of weather yesterday tempted us to forsake our shelter and try another tussle with the ice. We met it as soon as we ventured out; and the day closed with a northerly progress, by hard warping, of about three-quarters of a mile. The men were well tired; but the weather looked so threatening, that I had them up again at three o'clock this morning. My immediate aim is to attain a low rocky island which we see close into the shore, about a mile ahead of us.

Another
tussle with
the ice.

"These low shallows are evidently caused by the rocks and

CHAPTER
VI.

foreign materials discharged from the great valley. It is impossible to pass inside of them, for the huge boulders run close to the shore.¹³ Yet there is no such thing as doubling them outside, without leaving the holding-ground of the coast and thrusting ourselves into the drifting chaos of the pack. If we can only reach the little islet ahead of us, make a lee of its rocky crests, and hold on there until the winds give us fairer prospects!

"Midnight."—We did reach it; and just in time. At 11-30 P.M. our first whale-line was made fast to the rocks. Ten minutes later, the breeze freshened, and so directly in our teeth that we could not have gained our mooring ground. It is blowing a gale now, and the ice driving to the northward before it; but we can rely upon our hawsers. All behind us is now solid pack.

A gale.

August 15, Monday.—We are still fast, and, from the grinding of the ice against the southern cape, the wind is doubtlessly blowing a strong gale from the southward. Once, early this morning, the wind shifted by a momentary flaw, and came from the northward, throwing our brig with slack hawser upon the rocks. Though she bumped heavily she started nothing, till we got out a stern-line to a grounded iceberg.

The ice
closing
round.

"August 16, Tuesday."—Fast still; the wind dying out, and the ice outside closing steadily. And here, for all I can see, we must hang on for the winter, unless Providence shall send a smart, ice-shattering breeze, to open a road for us to the northward.

Trouble
with the
dogs.

"More bother with these wretched dogs! worse than a street of Constantinople emptied upon our decks; the unruly, thieving, wild-beast pack! Not a bear's paw, nor an Esquimaux cranium, or basket of mosses, or any specimen whatever, can leave your hands for a moment, without their making a rush at it, and, after a yelping scramble, swallowing it at a gulp. I have seen them attempt a whole feather bed; and here, this very morning, one of my Karsuk brutes has eaten up two entire birds'-nests which I had just before gathered from the rocks; feathers, filth, pebbles, and moss,—a peckful at the least. One was a perfect specimen of the nest of the tridactyl, the other of the big burgomaster.

"When we reach a floe, or berg, or temporary harbour, they start out in a body, neither voice nor lash restraining them, and scamper off like a drove of hogs in an Illinois oak-opening. Two of our largest left themselves behind at Fog Inlet, and we had to

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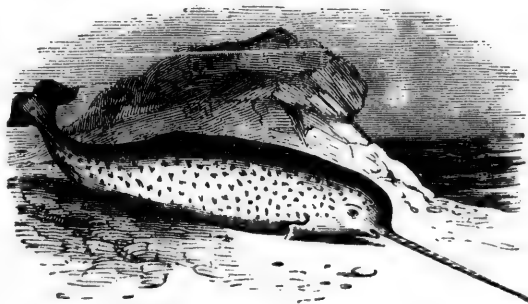
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send off a boat party to-day to their rescue. It cost a pull through ice and water of about eight miles before they found the recreants, fat and saucy, beside the carcass of the dead narwhal. After more than an hour spent in attempts to catch them, one was tied and brought on board; but the other suicidal scamp had to be left to his fate."¹⁴

CHAPTER
VI.



CHAPTER VII.

THE ERIC ON A BERG—GODSEND LEDGE—HOLDING ON—ADrift—SCUDDING
—TOWED BY A BERG—UNDER THE CLIFFS—NIPPINGS—AGROUND—ICE
PRESSURE—AT REST.

CHAPTER
VII.
Prospect
of escape.

"August 16, Tuesday.—The formation of the young ice seems to be retarded by the clouds; its greatest nightly freezing has been three-quarters of an inch. But I have no doubt, if we had continued till now in our little Refuge Harbour, the winter would have closed around us, without a single resource or chance for escape. Where we are now I cannot help thinking our embargo must be temporary. Ahead of us, to the north-east, is the projecting headland which terminates the long, shallow curve of Bedevilled Reach. This serves as a lee to the northerly drift, and forms a bight into which the south winds force the ice. The heavy flocs and bergs that are aground outside of us have encroached upon the lighter ice of the reach, and choke its outlet to the sea. But a wind off shore would start this whole pack, and leave us free. Meanwhile, for our comfort, a strong breeze is setting in from the southward, and the probabilities are that it will freshen to a gale.

"Eric the
Red."

View from
an iceberg.

"August 17, Wednesday.—This morning I pushed out into the drift, with the useful little specimen of naval architecture, which I call *Eric the Red*, but which the crew have named, less poetically, the *Red Boat*. We succeeded in forcing her on to one of the largest bergs of the chain ahead, and I climbed it, in the hope of seeing something like a lead outside, which might be reached by boring. But there was nothing of the sort. The ice looked as if perhaps an off shore wind might spread it; but, save a few meagre pools, which from our lofty eminence looked like the merest ink-spots on a table-cloth, not a mark of water could be seen. I could see our eastern or Greenland coast extending on, headland after headland, no less than five of them in number, until they faded into the mysterious North. Everything else, Ice!

"Up to this time we have had but two reliable observations to

determine our geographical position since entering Smith's Sound. CHAPTER VII.
 These, however, were carefully made on shore by theodolite and artificial horizons; and, if our five chronometers, rated but two weeks ago at Upernavik, are to be depended upon, there can be no correspondence between my own and the Admiralty charts north of latitude $78^{\circ} 18'$. Not only do I remove the general coast-line some two degrees in longitude to the eastward, but its trend is altered sixty degrees of angular measurement. No landmarks of my predecessor, Captain Inglefield, are recognisable.¹⁵ Difference of charts

"In the afternoon came a gale from the southward. We had some rough rubbing from the floe-pieces, with three heavy hawsers out to the rocks of our little ice-breaker; but we held on. Toward midnight, our six-inch line, the smallest of the three, parted, but the other two held bravely. Feeling what good service this island has done us, what a Godsend it was to reach her, and how gallantly her broken rocks have protected us from the rolling masses of ice that grind by her, we have agreed to remember this anchorage as 'Godsend Ledge.' Godsend Ledge.

"The walrus are very numerous, approaching within twenty feet of us, shaking their grim wet fronts, and mowing with their tusks the sea-ripples.

"*August 19, Friday.*—The sky looks sinister; a sort of scowl overhangs the blink under the great brow of clouds to the southward. The dovebies seem to distrust the weather, for they have forsaken the channel; but the walrus curvet around us in crowds. I have always heard that the close approach to land of these sphinx-faced monsters portends a storm. I was anxious to find a better shelter, and warped yesterday well down to the south end of the ledge; but I could not venture into the floes outside, without risking the loss of my dearly-earned ground. It may prove a hard gale; but we must wait it out patiently. Signs of an impending storm.

"*August 20, Saturday, 3½ P.M.*—By Saturday morning it blew a perfect hurricane. We had seen it coming, and were ready with three good hawsers out ahead, and all things snug on board. A hurricane.

"Still it came on heavier and heavier, and the ice began to drive more wildly than I thought I had ever seen it. I had just turned in to warm and dry myself during a momentary lull, and was stretching myself out in my bunk, when I heard the sharp twanging snap of a cord. Our six-inch hawser had parted, and

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CHAPTER VII. we were swinging by the two others; the gale roaring like a lion to the southward.

The cables break. "Half a minute more, and 'twang, twang!' came a second report. I knew it was the whale-line by the shrillness of the ring. Our noble ten-inch manilla still held on. I was hurrying my last sock into its seal-skin boot, when M'Gary came waddling down the companion-ladders:—'Captain Kane, she won't hold much longer: it's blowing the devil himself, and I am afraid to surge.'

"The manilla cable was proving its excellence when I reached the deck; and the crew, as they gathered round me, were loud in its praises. We could hear its deep Eolian chant, swelling through all the rattle of the running-gear and moaning of the shrouds. It was the death-song! The strands gave way with the noise of a shotted gun; and, in the smoke that followed their recoil, we were dragged out by the wild ice at its mercy.

Adrift. "We steadied and did some petty warping, and got the brig a good bed in the rushing drift; but it all came to nothing. We then tried to beat back through the narrow ice-clogged water-way, that was driving, a quarter of a mile wide, between the shore and the pack. It cost us two hours of hard labour, I thought skilfully bestowed; but at the end of that time we were at least four miles off, opposite the great valley in the centre of Bedevilled Reach.¹⁶ Ahead of us, further to the north, we could see the strait growing still narrower, and the heavy ice-tables grinding up, and clogging it between the shore-cliffs on one side, and the ledge on the other. There was but one thing left for us—to keep in some sort the command of the helm, by going freely where we must otherwise be driven. We allowed her to scud

Scudding. under a reefed fore-top-sail, all hands watching the enemy, as we closed, in silence.

The anchor gone. "At seven in the morning we were close upon the piling masses. We dropped our heaviest anchor with the desperate hope of winding the brig; but there was no withstanding the ice-torrent that followed us. We had only time to fasten a spar as a buoy to the chain, and let her slip. So went our best bower!

"Down we went upon the gale again, helplessly scraping along a lee of ice seldom less than thirty feet thick; one floe, measured

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PARTING MASTSERS OFF GOOSENO LEDGE.

{ From a sketch by Dykman }

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It was a fine day, so he gave him a present if we had one of \$100.00 under the tree on his 40th. Never did hear of him, but, none of his living ones. I don't know but there were

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by a line as we tried to fasten to it, more than forty. I had seen such ice only once before, and never in such rapid motion. One upturned mass rose above our gunwale, smashing in our bulwarks, and depositing half a ton of ice in a lump upon our decks. Our stanch little brig bore herself through all this wild adventure as if she had a charmed life.

"But a new enemy came in sight ahead. Directly in our way, just beyond the line of floe-ice against which we were alternately sliding and thumping, was a group of bergs. We had no power to avoid them; and the only question was, whether we were to be dashed in pieces against them, or whether they might not offer us some providential nook of refuge from the storm. But, as we neared them, we perceived that they were at some distance from the floe-edge, and separated from it by an interval of open water. Our hopes rose as the gale drove us toward this passage and into it; and we were ready to exult, when, from some unexplained cause,—probably an eddy of the wind against the lofty ice-walls,—we lost our headway. Almost at the same moment we saw that the bergs were not at rest; that with a momentum of their own they were bearing down upon the other ice, and that it must be our fate to be crushed between the two.

"Just then a broad scone-piece or low water-washed berg came driving up from the southward. The thought flashed upon me of one of our escapes in Melville Bay; and as the scone moved rapidly close alongside us, M'Gary managed to plant an anchor on its slope and hold on to it by a whale line. It was an anxious moment. Our noble tow-horse, whiter than the pale horse that seemed to be pursuing us, hauled us bravely on; the spray dashing over his windward flanks, and his forehead ploughing up the lesser ice as if in scorn. The bergs encroached upon us as we advanced; our channel narrowed to a width of perhaps forty feet; we braced the yards to clear the impending ice-walls.

"... We passed clear; but it was a close shave,—so close that our port quarter-boat would have been crushed if we had not taken it in from the davits,—and found ourselves under the lee of a berg, in a comparatively open lead. Never did heart-tried men acknowledge with more gratitude their merciful deliverance from a wretched death. . . .

"The day had already its full share of trials; but there were

CHAPTER
VII.

A group of
bergs.

Towed by
a berg.

CHAPTER
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more to come. A flaw drove us from our shelter, and the gale soon carried us beyond the end of the lead. We were again in the ice, sometimes escaping its onset by warping, sometimes forced to rely on the strength and buoyancy of the brig to stand its pressure, sometimes scudding wildly through the half-open drift. Our jib-boom was snapped off in the cap; we carried away our barricade stanchions, and were forced to leave our little *Eric*, with three brave fellows and their warps, out upon the floes behind us.

Under the cliffs. "A little pool of open water received us at last. It was just beyond a lofty cape that rose up like a wall, and under an iceberg that anchored itself between us and the gale. And here, close under the frowning shore of Greenland, ten miles nearer the Pole than our holding-ground of the morning, the men have turned in to rest.

"I was afraid to join them, for the gale was unbroken, and the floes kept pressing heavily upon our berg,—at one time so heavily as to sway it on its vertical axis toward the shore, and make its pinnacle overhang our vessel. My poor fellows had but a precarious sleep before our little harbour was broken up. They hardly reached the deck when we were driven astern, our rudder splintered, and the pintles torn from their boltings.

Nippings.

"Now began the nippings. The first shock took us on our port-quarter; the brig bearing it well, and, after a moment of the old-fashioned suspense, rising by jerks handsomely. The next was from a veteran floe, tongued and honeycombed, but floating in a single table over twenty feet in thickness. Of course, no wood or iron could stand this; but the shoreward face of our iceberg happened to present an inclined plane, descending deep into the water; and up this the brig was driven, as if some great steam screw-power was forcing her into a dry dock.

"At one time I expected to see her carried bodily up its face and tumbled over on her side. But one of those mysterious relaxations, which I have elsewhere called the pulses of the ice, lowered us quite gradually down again into the rubbish, and we were forced out of the line of pressure toward the shore. Here we succeeded in carrying out a warp, and making fast. We grounded as the tide fell; and would have heeled over to seaward, but for a mass of detached land-ice that grounded alongside of

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THE TIP OFF CAPE CORNELIUS GRINNELL - FORCE BAY.

(From a sketch by Dr. Kane)



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us, and, although it stove our bulwarks as we rolled over it, CHAPTER
shored us up." VII.

I could hardly get to my bunk, as I went down into our littered Effects of
cabin on the Sunday morning after our hard-working vigil of the storm
thirty-six hours. Bags of clothing, food, tents, India-rubber
blankets, and the hundred little personal matters which every man
likes to save in a time of trouble, were scattered around in places
where the owners thought they might have them at hand. The
pemmican had been on deck, the boats equipped, and everything
of real importance ready for a march, many hours before.

During the whole of the scenes I have been trying to describe, Bravery of
I could not help being struck by the composed and manly de- the sailors
meanour of my comrades. The turmoil of ice under a heavy sea
often conveys the impression of danger when the reality is absent;
but in this fearful passage, the parting of our hawsers, the loss of
our anchors, the abrupt crushing of our stoven bulwarks, and the
actual deposit of ice upon our decks, would have tried the nerves
of the most experienced ice-men. All—officers and men—worked
alike. Upon each occasion of collision with the ice which formed
our lee-coast, efforts were made to carry out lines; and some
narrow escapes were incurred by the zeal of the parties leading
them into positions of danger. Mr. Bonsall avoided being crushed
by leaping to a floating fragment; and no less than four of our
men at one time were carried down by the drift, and could only
be recovered by a relief party after the gale had subsided.

As our brig, borne on by the ice, commenced her ascent of the
berg, the suspense was oppressive. The immense blocks piled
against her, range upon range, pressing themselves under her keel
and throwing her over upon her side, till, urged by the successive
accumulations, she rose slowly and as if with convulsive efforts
along the sloping wall. Still there was no relaxation of the im-
pelling force. Shock after shock, jarring her to her very centre,
she continued to mount steadily on her precarious cradle. But
for the groaning of her timbers and the heavy sough of the floes,
we might have heard a pin drop. And then, as she settled down
into her old position, quietly taking her place among the broken
rubbish, there was a deep-breathing silence, as though all were
waiting for some signal before the clamour of congratulation and
comment could burst forth.¹⁷

CHAPTER VIII.

TRACKING—INSPECTING A HARBOUR—THE MUSK OX—STILL TRACKING—
CONSULTATION—WARPING AGAIN—AGROUND NEAR THE ICE-FOOT—A
BREATHING SPELL—THE BOAT EXPEDITION—DEPARTURE.

CHAPTER
VIII.

It was not until the 22d that the storm abated, and our absent men were once more gathered back into their mess. During the interval of forced inaction, the little brig was fast to the ice-belt which lined the bottom of the cliffs, and all hands rested; but as soon as it was over, we took advantage of the flood-tide to pass our tow-lines to the ice-beach, and, harnessing ourselves in like mules on a canal, made a good three miles by tracking along the coast.

Tracking.

"August 22, *Monday*.—Under this coast, at the base of a frowning precipice, we are now working toward a large bay which runs well in, facing at its opening to the north and west. I should save time if I could cross from headland to headland; but I am obliged to follow the tortuous land-belt, without whose aid we would go adrift in the pack again.

"The trend of our line of operations to-day is almost due east. We are already protected from the south, but fearfully exposed to a northerly gale. Of this there are fortunately no indications.

The brig
grounds
again.

"August 23, *Tuesday*.—We tracked along the ice-belt for about one mile, when the tide fell, and the brig grounded, heeling over until she reached her bearings. She rose again at 10 P.M., and the crew turned out upon the ice-belt.

Inclina-
tion of the
shore to
the east.

"The decided inclination to the eastward which the shore shows here is important as a geographical feature; but it has made our progress to the actual north much less than our wearily-earned miles should count for us. Our latitude, determined by the sun's lower culmination, if such a term can be applied to his midnight depression, gives $78^{\circ} 41'$. We are further north, therefore, than any of our predecessors, except Parry on his Spitzbergen foot-tramp. There are those with whom, no matter how insuperable

the obstacle, failure involves disgrace; we are safe at least from their censure. CHAPTER VIII.

"Last night I sent out Messrs. Wilson, Petersen, and Bonsall, to inspect a harbour which seems to lie between a small island and a



TRACKING ALONG THE ICE BELT.

valley that forms the inner slope of our bay. They report recent traces of deer, and bring back the skull of a musk ox.

Skull of a
musk ox
found.

"Hitherto this animal has never been seen east of Melville Island. But his being here does not surprise me. The migratory passages of the reindeer, who is even less Arctic in his range than the musk ox, led me to expect it. The fact points to some probable land connection between Greenland and America, or an approach sufficiently close to allow these animals to migrate between the two.

"The head is that of a male, well marked, but old; the teeth deficient, but the horns very perfect. These last measure 2 feet 3 inches across from tip to tip, and are each 1 foot 10 inches in length measured to the medium line of the forehead, up to which they are continued in the characteristic boss or protuberance. Our winter may be greatly cheered by their beef, should they revisit this solitude.¹⁸

CHAPTER
VIII.Flora of
the shore.

"We have collected thus far no less than twenty-two species of flowering plants on the shores of this bay. Scanty as this starved flora may seem to the botanists of more favoured zones, it was not without surprise and interest that I recognised among its thoroughly Arctic types many plants which had before been considered as indigenous only to more southern latitudes.

"The thermometer gave 25° last night, and the young ice formed without intermission; it is nearly two inches alongside the brig. I am loth to recognise these signs of the advancing cold. Our latitude to-day gives us 78° 37', taken from a station some three miles inside the indentation to the south.

Still track-
ing.

"*August 24, Wednesday.*—We have kept at it, tracking along, grounding at low water, but working like horses when the tides allowed us to move. We are now almost at the bottom of this indentation. Opposite us, on the shore, is a remarkable terrace, which rises in a succession of steps until it is lost in the low rocks of the back country. The ice around us is broken, but heavy, and so compacted that we can barely penetrate it. It has snowed hard since 10 P.M. of yesterday, and the sludge fills up the interstices of the floes. Nothing but a strong south wind can give us further progress to the north.

The young
ice.

"*August 25, Thursday.*—The snow of yesterday has surrounded us with a pasty sludge; but the young ice continues to be our most formidable opponent. The mean temperatures of the 22d and 23d were 27° and 30° Fahrenheit. I do not like being caught by winter before attaining a higher northern latitude than this, but it appears almost inevitable. Favoured as we have been by the mildness of the summer and by the abraiding action of the tides, there are indications around us which point to an early winter.

"We are sufficiently surrounded by ice to make our chances of escape next year uncertain, and yet not as far as I could wish for our spring journeys by the sledge.

Proposal to
return.

"*August 26, Friday.*—My officers and crew are stanch and firm men; but the depressing influences of want of rest, the rapid advance of winter, and, above all, our slow progress, make them sympathize but little with this continued effort to force a way to the north. One of them, an excellent member of the party, volunteered an expression of opinion this morning in favour of returning to the south and giving up the attempt to winter."

It is unjust for a commander to measure his subordinates in such exigencies by his own standard. The interest which they feel in an undertaking is of a different nature from his own. With him there are always personal motives, apart from official duty, to stimulate effort. He receives, if successful, too large a share of the credit, and he justly bears all the odium of failure.

An apprehension—I hope a charitable one—of this fact leads me to consider the opinions of my officers with much respect. I called them together at once, in a formal council, and listened to their views in full. With but one exception, Mr. Henry Brooks, they were convinced that a further progress to the north was impossible, and were in favour of returning southward to winter.

Not being able conscientiously to take the same view, I explained to them the importance of securing a position which might expedite our sledge journeys in the future; and, after assuring them that such a position could only be attained by continuing our efforts, announced my intention of warping toward the northern headland of the bay. “Once there, I shall be able to determine from actual inspection the best point for setting out on the operations of the spring; and at the nearest possible shelter to that point I will put the brig into winter harbour.” My comrades received this decision in a manner that was most gratifying, and entered zealously upon the hard and cheerless duty it involved.

The warping began again, each man, myself included, taking his turn at the capstan. The ice seemed less heavy as we penetrated into the recess of the bay; our track-lines and shoulder-belts replaced the warps. Hot coffee was served out; and, in the midst of cheering songs, our little brig moved off briskly.

Our success, however, was not complete. At the very period of high-water she took the ground while close under the walls of the ice-foot. It would have been madness to attempt shoring her up. I could only fasten heavy tackle to the rocks which lined the base of the cliffs, and trust to the noble little craft’s unassisted strength.

“August 27, *Saturday*.—We failed, in spite of our efforts, to get the brig off with last night’s tide; and, as our night-tides are generally the highest, I have some apprehensions as to her liberation.

CHAPTER
VIII.

"We have landed everything we could get up on the rocks, put out all our boats and filled them with ponderables alongside, sunk our rudder astern, and lowered our remaining heavy anchor into one of our quarter-boats. Heavy hawsers are out to a grounded lump of berg-ice, ready for instant heaving.

The ship
on fire.

"Last night she heeled over again so abruptly that we were all tumbled out of our berths. At the same time the cabin stove with a full charge of glowing anthracite was thrown down. The deck blazed smartly for a while; but, by sacrificing Mr. Sontag's heavy pilot-cloth coat to the public good, I choked it down till water could be passed from above to extinguish it. It was fortunate we had water near at hand, for the powder was not far off.

"3 P.M.—The ground-ice is forced in upon our stern, splintering our rudder, and drawing again the bolts of the pintle-casings.



AGROUND NEAR THE ICE-FOOT.

Afloat and
aground
again.

5 P.M.—She floats again, and our track-lines are manned. The men work with a will, and the brig moves along bravely.

"10 P.M.—Aground again; and the men, after a hot supper,

have turned in to take a spell of sleep. The brig has a hard time of it with the rocks. She has been high and dry for each of the two last tides, and within three days has grounded no less than five times. I feel that this is hazardous navigation, but am convinced it is my duty to keep on. Except the loss of a portion of our false keel, we have sustained no real injury. The brig is still water-tight; and her broken rudder and one shattered spar can be easily repaired.

CHAPTER
VIII.
Hazardous
naviga-
tion.

"August 28, Sunday.—By a complication of purchases, jumpers, and shores, we started the brig at 4.10; and, Mr. Ohlsen having temporarily secured the rudder, I determined to enter the floe and trust to the calm of the morning for a chance of penetrating to the northern land-ice ahead.

"This land-ice is very old, and my hope is to get through the loose trash that surrounds it by springing, and then find a fast that may serve our tracking-lines. I am already well on my way, and, in spite of the ominous nods of my officers, have a fair prospect of reaching it. Here it is that splicing the main-brace is of service!"²⁰

"I took the boat this morning with Mr. McGary, and sounded along outside the land-floe. I am satisfied the passage is practicable, and, by the aid of tide, wind, and springs, have advanced into the trash some two hundred yards.

"We have reached the floe, and find it as I hoped; the only drawback to tracking being the excessive tides, which expose us to grounding at low-water."

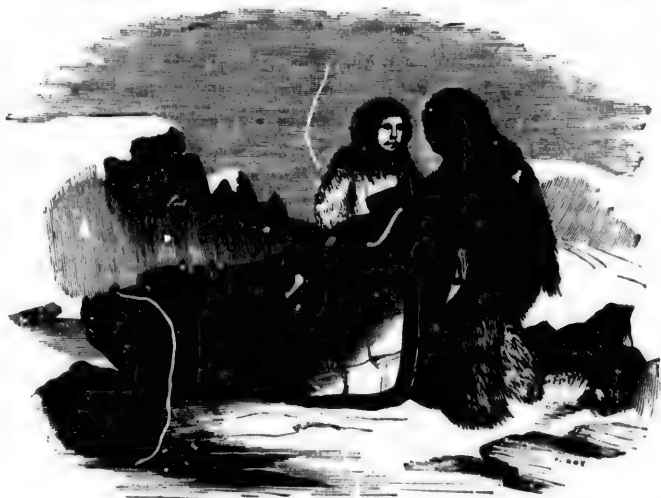
We had now a breathing spell, and I could find time to look out again upon the future. The broken and distorted area around us gave little promise of successful sledge-travel. But all this might change its aspect under the action of a single gale, and it was by no means certain that the ice-fields further north would have the same rugged and dispiriting character. Besides, the ice-belt was still before us, broken sometimes and difficult to traverse, but practicable for a party on foot, apparently for miles ahead; and I felt sure that a resolute boat's crew might push and track their way for some distance along it. I resolved to make the trial, and to judge what ought to be our wintering ground from a personal inspection of the coast.

A short
rest.

Plans for
the future

I had been quietly preparing for such an expedition for some

CHAPTER VIII. time. Our best and lightest whale boat had been fitted with a canvass cover, that gave it all the comfort of a tent. We had a



THE FORLORN HOPE.

supply of pemmican ready packed in small cases, and a sledge taken to pieces was stowed away under the thwarts. In the morning of the 29th, Mr. Brooks, M'Gary, and myself, walked fourteen miles along the marginal ice; it was heavy and complicated with drift, but there was nothing about it to make me change my purpose.

The boat
crew and
their
equipment

My boat crew consisted of seven, all of them volunteers and reliable:—Brooks, Bonsall, M'Gary, Sontag, Riley, Blake, and Morton. We had buffalo-robcs for our sleeping-gear, and a single extra day suit was put on board as common property. Each man carried his girdle full of woollen socks, so as to dry them by the warmth of his body, and a tin-cup, with a sheath-knife, at the belt; a soup-pot and lamp for the mess completed our outfit.

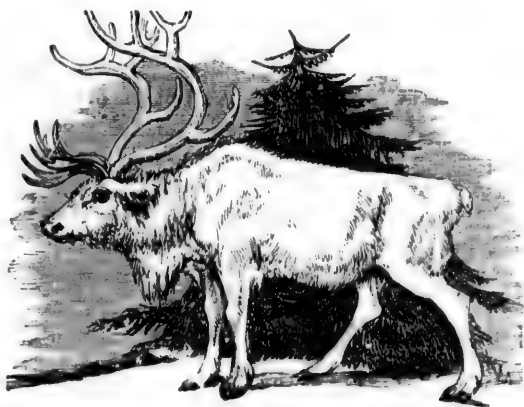
Departure
of the *For-
lorn Hope*.

In less than three hours from my first order, the *Forlorn Hope* was ready for her work, covered with tin to prevent her being cut through by the bay-ice; and at half-past three in the afternoon she was freighted, launched, and on her way.

I placed Mr. Ohlsen in command of the *Advance*, and Dr. Hayes

in charge of her log; Mr. Ohlsen with orders to haul the brig to the southward and eastward into a safe berth, and there to await my return. CHAPTER
VIII.

Many a warm shake of the hand from the crew we left showed me that our good-bye was not a mere formality. Three hearty cheers from all hands followed us,—a God-speed as we pushed off A friendly
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CHAPTER IX.

THE DEPÔT JOURNEY—THE ICE-BELT—CROSSING MINTURN RIVER—SKELETON MUSK OX—CROSSING THE GLACIER—PORTAGE OF INSTRUMENTS—EXCESSIVE BURDEN—MARY MINTURN RIVER—FORDING THE RIVER—THACKERAY HEADLAND—CAPE GEORGE RUSSELL—RETURN TO THE BRIG—THE WINTER HARBOUR.

CHAPTER
IX.

IN the first portions of our journey, we found a narrow but obstructed passage between the ice-belt and the outside pack. It was but a few yards in width, and the young ice upon it was nearly thick enough to bear our weight. By breaking it up we were able with effort to make about seven miles a day.

The night
encamp-
ment.

After such work, wet, cold, and hungry, the night's rest was very welcome. A couple of stanchions were rigged fore and aft, a sail tightly spread over the canvas cover of our boat, the cooking-lamp lit, and the buffalo-ropes spread out. Dry socks replaced the wet; hot tea and pemmican followed; and very soon we forgot the discomforts of the day,—the smokers musing over their pipes, and the sleepers snoring in dreamless forgetfulness.

The boat
left on the
ice.

We had been out something less than twenty-four hours when we came to the end of our boating. In front and on one side was the pack, and on the other a wall some ten feet above our heads, the impracticable ice-belt. By waiting for high tide, and taking advantage of a chasm which a water-stream had worn in the ice, we managed to haul up our boat on its surface; but it was apparent that we must leave her there. She was stowed away snugly under the shelter of a large hummock; and we pushed forward in our sledge, laden with a few articles of absolute necessity.

A highway
of ice.

Here, for the first time, we were made aware of a remarkable feature of our travel. We were on a table or shelf of ice, which clung to the base of the rocks overlooking the sea, but itself overhung by steep and lofty cliffs. Pure and beautiful as this icy highway was, huge angular blocks, some many tons in weight, were scattered over its surface; and long tongues of worn-down rock occasionally issued from the sides of the cliffs, and extended

across our course. The cliffs measured 1010 feet to the crest of the plateau above them.*

We pushed forward on this ice-table shelf as rapidly as the obstacles would permit, though embarrassed a good deal by the frequent watercourses, which created large gorges in our path, winding occasionally, and generally steep-sided. We had to pass our sledge carefully down such interruptions, and bear it upon our shoulders, wading, of course, through water of an extremely low temperature. Our night halts were upon knolls of snow under the rocks. At one of these the tide overflowed our tent, and forced us to save our buffalo sleeping-gear by holding it up until the water subsided. This exercise, as it turned out, was more of a trial to our patience than to our health. The circulation was assisted perhaps by a perception of the ludicrous. Eight Yankee Caryatides, up to their knees in water, and an entablature sustaining such of their household gods as could not bear immersion!²¹

On the 1st of September, still following the ice-belt, we found that we were entering the recesses of another bay but little smaller than that in which we had left our brig. The limestone walls ceased to overhang us; we reached a low fiord, and a glacier blocked our way across it. A succession of terraces, rising with symmetrical regularity, lost themselves in long parallel lines in the distance. They were of limestone shingle, and wet with the percolation of the melted ice of the glacier. Where the last of these terraced faces abutted upon the sea, it blended with the ice-foot, so as to make a frozen compound of rock and ice. Here, lying in a pasty slit, I found the skeleton of a musk ox. The head was united to the atlas; but the bones of the spine were separated about two inches apart, and conveyed the idea of a displacement produced rather by the sliding of the bed beneath, than by a force from without. The paste, frozen so as to resemble limestone rock, had filled the costal cavity, and the ribs were beautifully polished. It was to the eye an embedded fossil, ready for the museum of the collector.

I am minute in detailing these appearances, for they connect

* The cliffs were of tabular magnesian limestone, with interlaid and inferior sandstones. Their height, measured to the crest of the plateau, was 950 feet—a fair mean of the profile of the coast. The height of the talus of debris, where it united with the face of the cliff, was 590 feet, and its angle of inclination between 38° and 45°.

CHAPTER
IX.Organic
remains of
limestone
and ice.

themselves in my mind with the fossils of the Eischoltz cliffs, and the Siberian alluvions. I was startled at the facility with which the silicious limestone, under the alternate energies of frost and thaw, had been incorporated with the organic remains. It had already begun to alter the structure of the bones, and in several instances the vertebræ were entirely enveloped in travertin.

The table-lands and ravines round about this coast abound in such remains. Their numbers and the manner in which they are scattered imply that the animals made their migrations in droves, as is the case with the reindeer now. Within the area of a few acres we found seven skeletons and numerous skulls; these all occupied the snow streams or gullies that led to a gorge opening on the ice-belt, and might thus be gathered in time to one spot by the simple action of the watershed.²²

Crossing a
glacier.

To cross this glacier gave us much trouble. Its sides were steep, and a slip at any time might have sent us into the water below. Our shoes were smooth, unfortunately; but, by using cords, and lying at full length upon the ice, we got over without accident. On the other side of the glacier we had a portage of about three miles; the sledge being unladen and the baggage carried on our backs. To Mr. Brooks, admitted with unanimity to be the strongest man of our party, was voted our theodolite, about sixty pounds of well-polished mechanism, in an angular mahogany box. Our dip-circle, equally far from being an honorary tribute, fell to the lot of a party of volunteers, who bore it by turns.

Mean ele-
vation of
the coast.

During this inland crossing, I had fine opportunities of making sections of the terraces. We ascertained the mean elevation of the face of the coast to be 1300 feet. On regaining the seaboard the same frowning cliffs and rock-covered ice-belt that we had left greeted us.

The sledge
left behind

After an absence of five days, we found by observation that we were but forty miles from the brig. Besides our small daily progress, we had lost much by the tortuous windings of the coast. The ice outside did not invite a change of plan in that direction; but I determined to leave the sledge and proceed overland on foot. With the exception of our instruments, we carried no weight but pemmican and one buffalo-robe. The weather, as yet not far below the freezing-point, did not make a tent essential to the bivouac; and,

with this light equipment, we could travel readily two miles to one CHAPTER
with our entire outfit. On the 4th of September we made twenty- IX.
four miles with comparative ease, and were refreshed by a comfortable sleep after the toils of the day.*

The only drawback to this new method of advance was the Load of
inability to carry a sufficient quantity of food. Each man at each man.
starting had a fixed allowance of pemmican, which, with his other load, made an average weight of thirty-five pounds. It proved excessive; the Canadian voyageurs will carry much more, and for an almost indefinite period; but we found—and we had good walkers in our party—that a very few pounds overweight broke us down.

Our progress on the 5th was arrested by another bay much Discovery
larger than any we had seen since entering Smith's Straits. It of a bay.
was a noble sheet of water, perfectly open, and thus in strange contrast to the ice outside. The cause of this at the time inexplicable phenomenon was found in a roaring and tumultuous river, which, issuing from a fiord at the inner sweep of the bay, rolled with the violence of a snow-torrent over a broken bed of rocks. This river, Mary Min-
the largest probably yet known in North Greenland, was about three- turn river
quarters of a mile wide at its mouth, and admitted the tides for about three miles,²³ when its bed rapidly ascended, and could be traced by the configuration of the hills as far as a large inner fiord, I called it Mary Minturn River, after the sister of Mrs. Henry Grinnell. Its course was afterwards pursued to an interior glacier, from the base of which it was found to issue in numerous streams, that united into a single trunk about forty miles above its mouth. By the banks of this stream we encamped, lulled by the unusual music of running waters.

Here, protected from the frost by the infiltration of the melted snows, and fostered by the reverberation of solar heat from the rocks, we met a flower-growth, which, though clearly Arctic in its type, was rich in variety and colouring. Amid festuca and other tufted grasses, twinkled the purple *lychnis* and the white star of the chickweed; and not without its pleasing associations Flowers on
the banks
of the
stream.

* This halt was under the lee of a large boulder of greenstone, measuring 14 feet in its long diameter. It had the rude blocking out of a cube, but was rounded at the edges. The country for fourteen miles around was of the low-bottom series; the nearest greenstone must have been many miles remote. Boulders of syenite were numerous; their line of deposit nearly due north and south.

CHAPTER IX. I recognised a solitary hesperis,—the Arctic representative of the wallflowers of home.³⁴

Fording
the river.

We forded our way across this river in the morning, carrying our pemmican as well as we could out of water, but submitting ourselves to a succession of plunge baths as often as we trusted our weight on the ice-capped stones above the surface. The average depth was not over our hips; but the crossing cost us so much labour that we were willing to halt half a day to rest.

Some seven miles further on a large cape projects into this bay and divides it into two indentations, each of them the seat of minor watercourses, fed by the glaciers. From the numerous tracks found in the moss-beds, they would seem to be the resort of deer. Our meridian observations by theodolite gave the latitude of but $78^{\circ} 52'$: the magnetic dip was $84^{\circ} 49'$.

Direction
of the
coast.

It was plain that the coast of Greenland here faced toward the north. The axis of both these bays and the general direction of the watercourses pointed to the same conclusion. Our longitude was $78^{\circ} 41' W$.

Leaving four of my party to recruit at this station, I started the next morning, with three volunteers, to cross the ice to the north-eastern headland, and thus save the almost impossible circuit by the shores of the bay. This ice was new, and far from safe: its margin along the open water made by Minturn River required both care and tact in passing over it. We left the heavy theodolite behind us, and carried nothing except a pocket-sextant, my Fraunhöfer, a walking-pole, and three days' allowance of raw pemmican.

Cape
William
Make-
peace
Thackeray

We reached the headland after sixteen miles of walk, and found the ice-foot in good condition, evidently better fitted for sledge-travel than it was to the south. This point I named Cape William Makepeace Thackeray. Our party knew it as Chimney Rock. It was the last station on the coast of Greenland, determined by intersecting bearings of theodolite, from known positions to the south. About eight miles beyond it is a large headland, the highest visible from the late position of our brig, shutting out all points further north. It is indicated on my chart as Cape Francis Hawks. We found the tablelands were 1200 feet high by actual measurement, and interior plateaus were seen of an estimated height of 1800.

Height of
the table-
lands and
plateaus.

I determined to seek some high headland beyond the cape, and make it my final point of reconnoissance.

I shall never forget the sight, when, after a hard day's walk, I looked out from an altitude of 1100 feet upon an expanse extending beyond the eightieth parallel of latitude. Far off on my left was the western shore of the Sound, losing itself in distance toward the north. To my right a rolling primary country led on to a low dusky wall-like ridge, which I afterwards recognised as the Great Glacier of Humboldt; and still beyond this, reaching northward from the N.N.E., was the land which now bears the name of Washington; its most projecting headland, Cape Andrew Jackson, bore 14° by sextant from the furthest hill, Cape John Barrow, on the opposite side. The great area between was a solid sea of ice. Close along its shore, almost looking down upon it from the crest of our lofty station, we could see the long lines of hummocks dividing the floes like the trenches of a beleaguered city.²⁵ Further out, a stream of icebergs, increasing in numbers as they receded, showed an almost impenetrable barrier, since I could not doubt that among their recesses the ice was so crushed as to be impassable by the sledge.

CHAPTER
IX.
The Great
Glacier of
Humboldt.

Nevertheless, beyond these again the ice seemed less obstructed. Distance is very deceptive upon the ice, subduing its salient features, and reducing even lofty bergs to the appearance of a smooth and attractive plain. But, aided by my Fraunhofer telescope, I could see that traversable areas were still attainable. Slowly, and almost with a sigh, I laid the glass down and made up my mind for a winter search.

I had seen no place combining so many of the requisites of a good winter harbour as the bay in which we left the *Advance*. Near its south-western corner the wide streams and the water-courses on the shore promised the earliest chances of liberation in the coming summer. It was secure against the moving ice: lofty headlands walled it in beautifully to seaward, enclosing an anchorage with a moderate depth of water; yet it was open to the meridian sunlight, and guarded from winds, eddies, and drift. The space enclosed was only occupied by a few rocky islets and our brig. We soon came in sight of her on our return march, as she lay at anchor in its southern sweep, with her masts cutting sharply against the white glacier; and, hurrying on through a gale, were taken on board without accident.

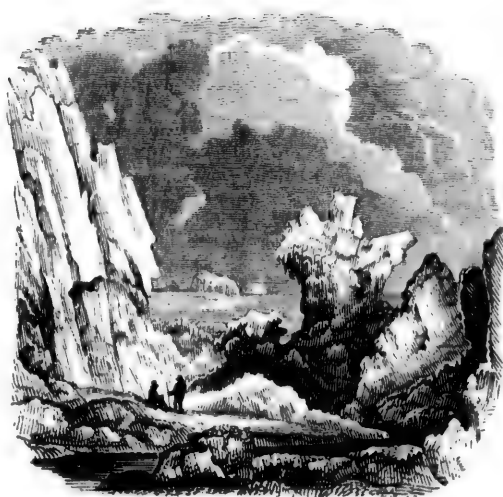
A winter
harbour.

Return to
the brig.

My comrades gathered anxiously around me, waiting for the

CHAPTER
IX.

news. I told them in a few words of the results of our journey, and why I had determined upon remaining, and gave at once the order to warp in between the islands. We found seven-fathom soundings and a perfect shelter from the outside ice; and thus laid our little brig in the harbour, which we were fated never to leave together,—a long resting-place to her indeed, for the same ice is around her still.

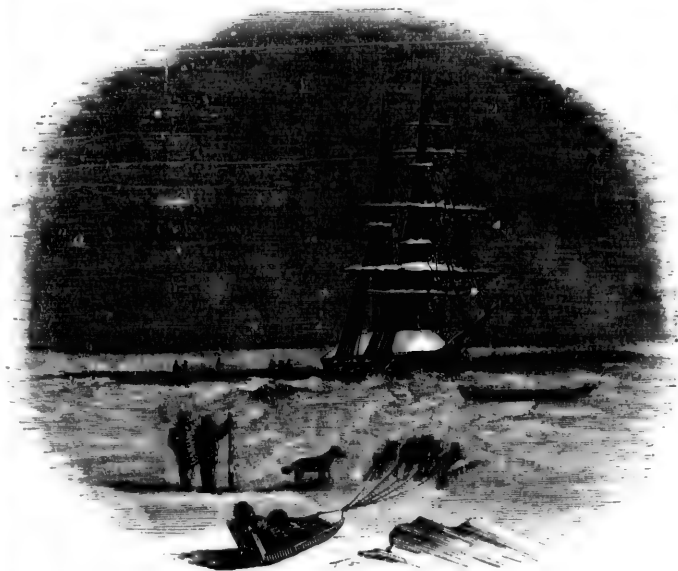
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CHAPTER X.

APPROACHING WINTER—STORING PROVISIONS—BUTLER STOREHOUSE—SUNDAY AT REST—BUILDING OBSERVATORY—TRAINING THE DOGS—THE LITTLE WILLIE—THE ROAD—THE FAITH—SLEDGING—RECONNOISSANCE—DÉPÔT PARTY.

THE winter was now approaching rapidly. The thermometer had fallen by the 10th of September to 14° , and the young ice had cemented the floes so that we could walk and sledge round the brig. About sixty paces north of us an iceberg had been caught, and was frozen in; it was our neighbour while we remained in Rensselaer Harbour. The rocky islets around us were fringed

CHAPTER
X.
Approach
of the
winter



RENSSELAER HARBOUR.

with hummocks; and, as the tide fell, their sides were coated with opaque crystals of bright white. The birds had gone. The sea-

CHAPTER X.
Migration of the birds.

swallows, which abounded when we first reached here, and even the young burgomasters that lingered after them, had all taken their departure for the south. Except the snow-birds, these are the last to migrate of all the Arctic birds.

Probable time of the sun's disappearance.

"September 10, Saturday.—We have plenty of responsible work before us. The long 'night in which no man can work' is close at hand: in another month we shall lose the sun. Astronomically, he should disappear on the 24th of October, if our horizon were free; but it is obstructed by a mountain ridge, and, making all allowance for refraction, we cannot count on seeing him after the 10th.

"First and foremost, we have to unstow the hold, and deposit its contents in the storehouse on Butler Island. Brooks and a



BUTLER'S ISLAND STOREHOUSE.

party are now briskly engaged in this double labour, running loaded boats along a canal that has to be recut every morning.

Catering for winter diet.

"Next comes the catering for winter diet. We have little or no game as yet in Smith's Sound; and, though the traces of deer that we have observed may be followed by the animals themselves, I cannot calculate upon them as a resource. I am without the hermetically-sealed meats of our last voyage; and the use of salt meat

in circumstances like ours is never safe. A fresh-water pond, which fortunately remains open at Medary, gives me a chance for some further experiments in freshening this portion of our stock. Steaks of salt junk, artistically cut, are strung on lines like a country-woman's dried apples, and soaked in festoons under the ice. The salmon-trout and salt codfish which we bought at Fiskernaes are placed in barrels, perforated to permit a constant circulation of fresh water through them. Our pickled cabbage is similarly treated, after a little potash has been used to neutralize the acid. All these are submitted to twelve hours of alternate soaking and freezing, the crust of ice being removed from them before each immersion. This is the steward's province, and a most important one it is.

"Every one else is well employed,—M'Gary arranging and Bonsall making the inventory of our stores; Ohlsen and Petersen building our deck-house; while I am devising the plan of an architectural interior, which is to combine, of course, the utmost ventilation, room, dryness, warmth, general accommodation, comfort,—in a word, all the appliances of health.

"We have made a comfortable dog-house on Butler Island; but though our Esquimaux *canaille* are within scent of our cheeses there, one of which they ate yesterday for lunch, they cannot be persuaded to skip away from the vessel. They prefer the bare snow, where they can couch within the sound of our voices, to a warm kennel upon the rocks. Strange that this dog-distinguishing trait of affection for man should show itself in an animal so imperfectly reclaimed from a savage state that he can hardly be caught when wanted!

Affection
of the dogs

"September 11, *Sunday*.—To-day came to us the first quiet Sunday of harbour life. We changed our log registration from sea-time to the familiar home series that begins at midnight. It is not only that the season has given us once more a local habitation; but there is something in the return of varying day and night that makes it grateful to reinstate this domestic observance. The long staring day, which has clung to us for more than two months, to the exclusion of the stars, has begun to intermit its brightness. Even Aldebaran, the red eye of the Bull, flared out into familiar recollection as early as ten o'clock; and the heavens, though still somewhat reddened by the gaudy tints of midnight,

Sunday
rest.

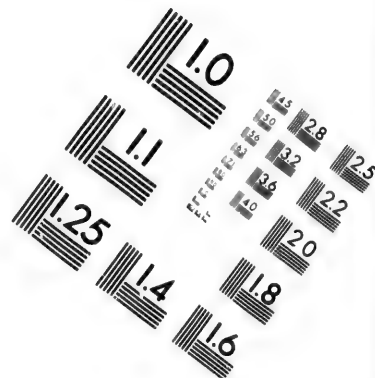
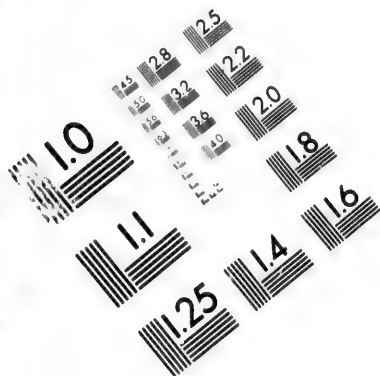
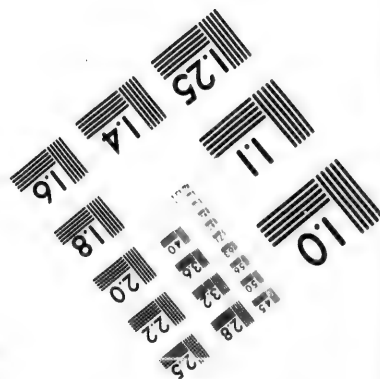
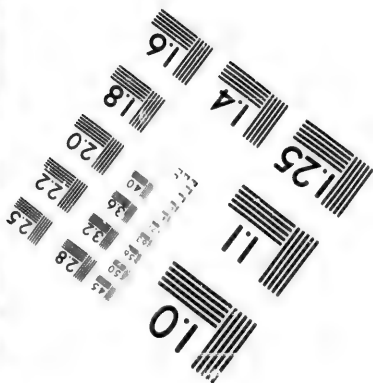
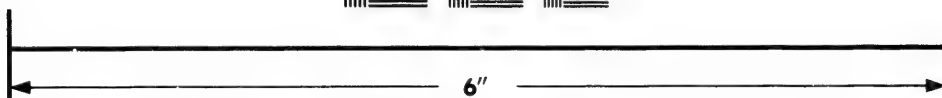
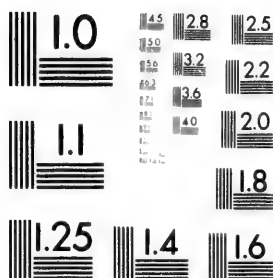


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CHAPTER
X.
The Polar
Star.

gave us Capella and Arcturus, and even that lesser light of home memories, the Polar Star. Stretching my neck to look uncomfortably at this indication of our extreme northernness, it was hard to realize that he was not directly overhead; and it made me sigh, as I measured the few degrees of distance that separated our zenith from the Pole over which he hung.

"We had our accustomed morning and evening prayers; and the day went by, full of sober thought, and, I trust, wise resolve.

Site of the
observa-
tory.

"Fern
Rock."

Provision
depôts.

Plans of
future
search.

"*September 12, Monday.*—Still going on with Saturday's operations, amid the thousand discomforts of house-cleaning and moving combined. I dodged them for an hour this morning, to fix with Mr. Sontag upon a site for our observatory; and the men are already at work hauling the stone for it over the ice on sledges. It is to occupy a rocky islet, about a hundred yards off, that I have named after a little spot that I long to see again, 'FERN ROCK.' This is to be for me the centre of familiar localities. As the classic Mivins breakfasted lightly on a cigar and took it out in sleep, so I have dined on salt pork and made my dessert of home dreams.

"*September 13, Tuesday.*—Besides preparing our winter quarters, I am engaged in the preliminary arrangements for my provision depôts along the Greenland coast. Mr. Kennedy is, I believe, the only one of my predecessors who has used October and November for Arctic field-work; but I deem it important to our movements during the winter and spring, that the depôts in advance should be made before the darkness sets in. I purpose arranging three of them at intervals,—pushing them as far forward as I can,—to contain in all some twelve hundred pounds of provision, of which eight hundred will be pemmican."

My plans of future search were directly dependent upon the success of these operations of the fall. With a chain of provision-depôts along the coast of Greenland, I could readily extend my travel by dogs. These noble animals formed the basis of my future plans: the only drawback to their efficiency as a means of travel was their inability to carry the heavy loads of provender essential for their support. A badly-fed or heavily-loaded dog is useless for a long journey; but with relays of provision I could start empty, and fill up at our final station.

My dogs were both Esquimaux and Newfoundlanders. Of these CHAPTER
last I had ten: they were to be carefully broken, to travel by voice X.
without the whip, and were expected to be very useful for heavy Training
draught, as their tractability would allow the driver to regulate the dogs.
their pace. I was already training them in a light sledge,
to drive, unlike the Esquimaux, two abreast, with a regular harness,
a breast-collar of flat leather, and a pair of traces. Six of them
made a powerful travelling-team; and four could carry me and
my instruments, for short journeys around the brig, with great
ease.

The sledge I used for them was built, with the care of cabinet- The Little
work, of American hickory, thoroughly seasoned. The curvature Willie.
of the runners was determined experimentally;²⁶ they were shod
with annealed steel, and fastened by copper rivets, which could
be renewed at pleasure. Except this, no metal entered into its
construction. All its parts were held together by seal-skin lash-
ings, so that it yielded to inequalities of surface and to sudden
shock. The three paramount considerations of lightness, strength,
and diminished friction, were well combined in it. This beautiful
and, as we afterwards found, efficient and enduring sledge was
named the *Little Willie*.

The Esquimaux dogs were reserved for the great tug of the The Esqui-
actual journeys of search. They were now in the semi-savage maux
condition which marks their close approach to the wolf; and dogs.
according to Mr. Petersen, under whose care they were placed,
were totally useless for journeys over such ice as was now
before us. A hard experience had not then opened my eyes to
the inestimable value of these dogs: I had yet to learn their
power and speed, their patient, enduring fortitude, their sagacity
in tracking these icy morasses, among which they had been born
and bred.

I determined to hold back my more distant provision parties as The road.
long as the continued daylight would permit; making the New-
foundland dogs establish the dépôts within sixty miles of the brig.
My previous journey had shown me that the ice-belt, clogged with
the foreign matters dislodged from the cliffs, would not at this
season of the year answer for operations with the sledge, and that
the ice of the great pack outside was even more unfit, on account
of its want of continuity. It was now so consolidated by advanc-

CHAPTER
X.

ing cold as to have stopped its drift to the south ; but the large floes or fields which formed it were imperfectly cemented together, and would break into hummocks under the action of winds, or even of the tides. It was made still more impassable by the numerous bergs* which kept ploughing with irresistible momentum through the ice-tables, and rearing up barricades that defied the passage of a sledge.

It was desirable, therefore, that our *depôt* parties should not enter upon their work until they could avail themselves of the young ice. This now occupied a belt about 100 yards in mean breadth, close to the shore, and, but for the fluctuations of the tides, would already be a practicable road. For the present, however, a gale of wind or a spring tide might easily drive the outer floes upon it, and thus destroy its integrity.

Description of the *Faith*, a model sledge.

The party appointed to establish this *depôt* was furnished with a sledge, the admirable model of which I obtained through the British Admiralty. The only liberty that I ventured to take with this model—which had been previously tested by the adventurous journeys of M'Clintock in Lancaster Sound—was to lessen the height, and somewhat increase the breadth of the runner ; both of which, I think, were improvements, giving increased strength, and preventing too deep a descent into the snow. I named



THE RUE-RADDY.

her the *Faith*. Her length was thirteen feet, and breadth four. She could readily carry fourteen hundred pounds of mixed stores.

This noble old sledge, which is now endeared to me by every pleasant association, bore the brunt of the heaviest parties, and came back, after the descent of the coast, comparatively sound. The men were attached in her in such a way as to make the line of draught or traction as near as possible in the axis of the weight. Each man had his own shoulder-belt, or "rue-raddy," as we used to call it, and his own track-line, which, for want of horse-hair, was made of

* The general drift of these great masses was to the south,—a plain indication of deep sea-currents in that direction, and a convincing proof, to me, of a discharge from some northern water.

Manilla rope ; it traversed freely by a ring on a loop or bridle, that extended from runner to runner in front of the sledge. These track-ropes varied in length, so as to keep the members of the party from interfering with each other by walking abreast. The longest was three fathoms, eighteen feet, in length ; the shortest, directly fastened to the sledge runner, as a means of guiding or suddenly arresting and turning the vehicle.

The cargo for this journey, without including the provisions of the party, was almost exclusively pemmican. Some of this was put up in cylinders of tinned iron with conical terminations, so as to resist the assaults of the white bear ; but the larger quantity was in strong wooden cases or kegs, well hooped with iron, holding about seventy pounds each. Surmounting this load was a light india-rubber boat, made quite portable by a frame of basket willow, which I hoped to launch on reaching open water.⁵⁷

The personal equipment of the men was a buffalo-robe for the party to lie upon, and a bag of Mackinaw blanket for each man to crawl into at night. India-rubber cloth was to be the protection from the snow beneath. The tent was of canvas, made after the plan of our English predecessors. We afterward learned to modify and reduce our travelling gear, and found that in direct proportion to its simplicity and our apparent privation of articles of supposed necessity were our actual comfort and practical efficiency. Step by step, as long as our Arctic service continued, we went on reducing our sledging outfit, until at last we came to the Esquimaux ultimatum of simplicity—raw meat and a fur bag.

While our arrangements for the winter were still in progress, I sent out Mr. Wilson and Dr. Hayes, accompanied by our Esquimaux, Hans, to learn something of the interior features of the country, and the promise it afforded of resources from the hunt. They returned on the 16th of September, after a hard travel, made with excellent judgment and abundant zeal. They penetrated into the interior about ninety miles, when their progress was arrested by a glacier, 400 feet high, and extending to the north and west as far as the eye could reach. This magnificent body of interior ice formed on its summit a complete plateau,—a *mer de glace*, abutting upon a broken plain of syenite.⁵⁸ They found no large lakes. They saw a few reindeer at a distance, and numerous hares and rabbits, but no ptarmigan.

CHAPTER
X.

Outfit.

Reconnaissance.

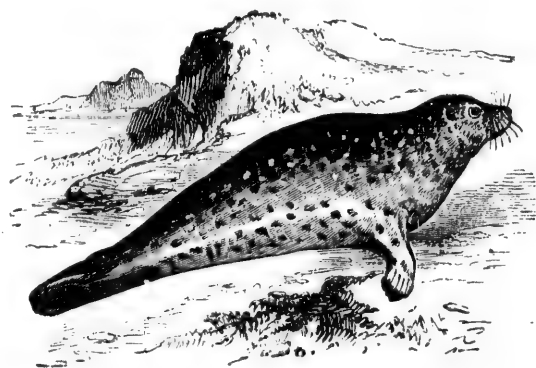
CHAPTER

X.

Departure
of the
depôt
party.

"September 20, Tuesday.—I was unwilling to delay my dépôt party any longer. They left the brig, M'Gary, and Bonsall, with five men, at half-past one to-day. We gave them three cheers, and I accompanied them with my dogs as a farewell escort for some miles.

"Our crew proper is now reduced to three men; but all the officers, the doctor among the rest, are hard at work upon the observatory and its arrangements."



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CHAPTER XI.

THE OBSERVATORY—THERMOMETERS—THE RATS—THE BRIG ON FIRE—
ANCIENT SLEDGE-TRACKS—ESQUIMAUX HUTS—HYDROPHOBIA—SLEDGE-
DRIVING—MUSK OX TRACKS—A SLEDGE PARTY.

THE island on which we placed our observatory was some fifty paces long by perhaps forty broad, and about thirty feet above the water-line. Here we raised four walls of granite blocks, cementing them together with moss and water, and the never-failing aid of frost. On these was laid a substantial wooden roof, perforated at the meridian and prime vertical. For pedestals we had a conglomerate of gravel and ice, well rammed down while liquid in our iron-hooped pemmican-casks, and as free from all vibration as the rock they rested on. Here we mounted our transit and theodolite.

CHAPTER
XI.
Building
for the
observa-
tory.

The magnetic observatory adjoining had rather more of the affectation of comfort. It was of stone, ten feet square, with a wooden floor as well as roof, a copper fire-grate, and stands of the same Arctic breccia as those in its neighbour. No iron was used in its construction. Here were our magnetometer and dip instruments.

Magnetic
observa-
tory.

Our tide-register was on board the vessel, a simple pulley-gauge, arranged with a wheel and index, and dependent on her rise and fall for its rotation.²⁹

Tide regi-
ster.

Our meteorological observatory was upon the open ice-field, one hundred and forty yards from the ship. It was a wooden structure, latticed and pierced with augur-holes on all sides, so as to allow the air to pass freely, and firmly luted to its frozen base. To guard against the fine and almost impalpable drift, which insinuates itself everywhere, and which would interfere with the observation of minute and sudden changes of temperature, I placed a series of screens at right angles to each other, so as to surround the inner chamber.

Meteoro-
logical
observa-
tory.

The thermometers were suspended within the central chamber; a pane of glass permitted the light of our lanterns to reach them from a distance, and a lens and eye-glass were so fixed as to allow

Thermo-
meters.

CHAPTER us to observe the instruments without coming inside the screens.
 XI. Their sensibility was such, that, when standing at 40° and 50° below zero, the mere approach of the observer caused a perceptible rise of the column. One of them, a three-feet spirit standard by Taliabue, graduated to 70° minus, was of sufficiently extended register to be read by rapid inspection to tenths of a degree. The influence of winds I did not wish absolutely to neutralize; but I endeavoured to make the exposure to them so uniform as to give a relative result for every quarter of the compass. We were well supplied with thermometers of all varieties.

Wind-gauge. I had devised a wind-gauge to be observed by a tell-tale below deck; but we found that the condensing moisture so froze around it as to clog its motion.

Rats. "*September 30, Friday.*—We have been terribly annoyed by rats. Some days ago we made a brave effort to smoke them out with the vilest imaginable compound of vapours,—brimstone, burnt leather, and arsenic,—and spent a cold night in a deck-bivouac, to give the experiment fair play. But they survived the fumigation. We now determined to dose them with carbonic acid gas. Dr. Hayes burnt a quantity of charcoal; and we shut down the hatches, after pasting up every fissure that communicated aft and starting three stoves on the skin of the forepeak.

The cook's misadventure. "As the gas was generated with extreme rapidity in the confined area below, great caution had to be exercised. Our French cook, good Pierre Schubert,—who to a considerable share of bull-headed intrepidity unites a commendable portion of professional zeal,—stole below, without my knowledge or consent, to season a soup. Morton fortunately saw him staggering in the dark, and, reaching him with great difficulty as he fell, both were hauled up in the end,—Morton, his strength almost gone, and the cook perfectly insensible.

A serious disaster. "The next disaster was of a graver sort. I record it with emotions of mingled awe and thankfulness. We have narrowly escaped being burnt out of house and home. I had given orders that the fires, lit under my own eye, should be regularly inspected; but I learned that Pierre's misadventure had made the watch pretermitt for a time opening the hatches. As I lowered a lantern, which was extinguished instantly, a suspicious odour reached me, as of burning wood. I descended at once. Reaching the deck of the

forecastle, my first glance toward the fires showed me that all was safe there; and, though the quantity of smoke still surprised me, I was disposed to attribute it to the recent kindling. But at this moment, while passing on my return near the door of the bulkhead, which leads to the carpenter's room, the gas began to affect me. My lantern went out as if quenched by water; and, as I ran by the bulkhead door, I saw the deck near it a mass of glowing fire for some three feet in diameter. I could not tell how much further it extended, for I became quite insensible at the foot of the ladder, and would have sunk had not Mr. Brooks seen my condition and hauled me out.

The deck
on fire.

"When I came to myself, which happily was very soon, I confided my fearful secret to the four men around me, Brooks, Ohlsen, Blake, and Stevenson. It was all-important to avoid confusion: we shut the doors of the galley, so as to confine the rest of the crew and officers aft, and then passed up water from the fire-hole alongside. It was done very noiselessly. Ohlsen and myself went down to the burning deck; Brooks handed us in the buckets; and in less than ten minutes we were in safety. It was interesting to observe the effect of steam upon the noxious gas. Both Ohlsen and myself were greatly oppressed until the first bucket was poured on; but as I did this, directly over the burning coal, raising clouds of steam, we at once experienced relief: the fine aqueous particles seemed to absorb the carbonic acid instantly. We found the fire had originated in the remains of a barrel of charcoal, which had been left in the carpenter's room, ten feet from the stoves, and with a bulkhead separating it from them. How it had been ignited it was impossible to know. Our safety was due to the dense charge of carbonic acid gas which surrounded the fire, and the exclusion of atmospheric air. When the hatches were opened the flame burst out with energy. Our fire-hole was invaluable; and I rejoiced that, in the midst of our heavy duties, this essential of an Arctic winter harbour had not been neglected. The ice around the brig was already fourteen inches thick.

Measures
taken to
extinguish
it.

Effect of
steam on
gas.

Origin of
the fire.

Means of
safety.

"October 1, *Saturday*.—Upon inspecting the scene of yesterday's operations, we found twenty-eight well-fed rats of all varieties of age. The cook, though unable to do duty, is better; I can hear him chanting his *Béranger* through the blankets in his bunk, happy over his holiday, happy to be happy at everything. I had

CHAPTER
XI.

a larger dose of carbonic acid even than he, and am suffering considerably with palpitations and vertigo. If the sentimental asphyxia of Parisian charcoal resembles in its advent that of the Arctic zone, it must be, I think, a poor way of dying.

Old sledge
tracks.

"*October 3, Monday.*—On shore to the south-east, above the first terrace, Mr Petersen found unmistakable signs of a sledge-passage. The tracks were deeply impressed, but certainly more than one season old. This adds to our hope that the natives, whose ancient traces we saw on the point south of Godsend Ledge, may return this winter.

Esqui-
maux huts.

"*October 5, Wednesday.*—I walked this afternoon to another group of Esquimaux huts, about three miles from the brig. They are four in number, long deserted, but, to an eye unpractised in Arctic antiquarian inductions, in as good preservation as a last year's tenement at home. The most astonishing feature is the presence of some little out-huts, or, as I first thought them, dog-kennels. These are about four feet by three in ground plan, and some three feet high; no larger than the pologs of the Tchuschi. In shape they resemble a rude dome, and the stones of which they are composed are of excessive size, and evidently selected for smoothness. They were, without exception, of water-washed limestone. They are heavily sodded with turf, and a narrow slab of clay-slate serves as a door. No doubt they are human habitations,—retiring chambers, into which, away from the crowded families of the hut, one or even two Esquimaux have burrowed for sleep,—chilly dormitories in the winter of this high latitude.³¹

A dog at-
tacked by
hydro-
phobia.

"A circumstance that happened to-day is of serious concern to us. Our sluts have been adding to our stock. We have now on hand four reserved puppies of peculiar promise; six have been ignominiously drowned, two devoted to a pair of mittens for Dr. Kane, and seven eaten by their mammas. Yesterday the mother of one batch, a pair of fine white pups, showed peculiar symptoms. We recalled the fact that for days past she had avoided water, or had drunk with spasm and evident aversion; but hydrophobia, which is unknown north of 70°, never occurred to us. The animal was noticed this morning walking up and down the deck with a staggering gait, her head depressed, and her mouth frothing and tumid. Finally she snapped at Petersen, and fell foaming and biting at his feet. He reluctantly pronounced it hydrophobia, and

advised me to shoot her. The advice was well-timed : I had hardly cleared the deck before she snapped at Hans, the Esquimaux, and recommenced her walking trot. It was quite an anxious moment to me ; for my Newfoundlanders were around the housing, and the hatches open. We shot her, of course.

"October 6, *Thursday*.—The hares are less numerous than they were. They seek the coast when the snows fall in the interior, and the late south-east wind has probably favoured their going back. These animals are not equal in size either to the European hare or their brethren of the North American continent. The latter, according to Seemann, weigh upon an average fourteen pounds. A large male, the largest seen by us in Smith's Sound, weighed but nine ; and our average so far does not exceed seven and a half. They measure generally less by some inches in length than those noticed by Dr. Richardson. Mr. Petersen is quite successful in shooting these hares : we have a stock of fourteen now on hand.

"We have been building stone traps on the hills for the foxes, whose traces we see there in abundance, and have determined to organize a regular hunt as soon as they give us the chance.

"October 8, *Saturday*.—I have been practising with my dog-sledge and an Esquimaux team till my arms ache. To drive such an equipage a certain proficiency with the whip is indispensable ; which, like all proficiency, must be worked for. In fact the weapon has an exercise of its own, quite peculiar, and as hard to learn as single-stick or broadsword.

"The whip is 6 yards long, and the handle but 16 inches,—a short lever, of course, to throw out such a length of seal-hide. Learn to do it, however, with a masterly sweep, or else make up your mind to forego driving sledge ; for the dogs are guided solely by the lash, and you must be able not only to hit any particular dog out of a team of twelve, but to accompany the feat also with a resounding crack. After this you find that to get your lash back involves another difficulty ; for it is apt to entangle itself among the dogs and lines, or to fasten itself cunningly round bits of ice, so as to drag you head over heels into the snow.

"The secret by which this complicated set of requirements is fulfilled consists in properly describing an arc from the shoulder, with a stiff elbow, giving the jerk to the whip handle from the hand and wrist alone. The lash trails behind as you travel, and

CHAPTER
XI.The dog
whip.

when thrown forward is allowed to extend itself without an effort to bring it back. You wait patiently after giving the projectile impulse until it unwinds its slow length, reaches the end of its tether, and cracks to tell you that it is at its journey's end. Such a crack on the ear or forefoot of an unfortunate dog is signalized by a howl quite unmistakable in its import.

"The mere labour of using this whip is such that the Esquimaux travel in couples, one sledge after the other. The hinder dogs follow mechanically, and thus require no whip; and the drivers change about so as to rest each other.

Wild ani-
mals.

"I have amused myself, if not my dogs, for some days past with this formidable accessory of Arctic travel. I have not quite got the knack of it yet, though I might venture a trial of cracking against the postilion college of Lonjumeau.

"*October 9, Sunday.*—Mr. Petersen shot a hare yesterday. They are very scarce now, for he travelled some five hours without seeing another. He makes the important report of musk ox tracks on the recent snow. Dr. Richardson says that these are scarcely distinguishable from the reindeer's except by the practised eye: he characterizes them as larger, but not wider. The tracks that Petersen saw had an interesting confirmation of their being those of the musk ox, for they were accompanied by a second set of footprints, evidently belonging to a young one of the same species, and about as large as a middle-sized reindeer's. Both impressions also were marked as if by hair growing from the pastern joint, for behind the hoof was a line brushed in the snow.³³

"To-day Hans brought in another hare he had shot. He saw seven reindeer in a large valley off Bedevilled Reach, and wounded one of them. This looks promising for our winter commissariat.

"*October 10, Monday.*—Our dépôt party has been out twenty days, and it is time they were back: their provisions must have run very low, for I enjoined them to leave every pound at the dépôt they could spare. I am going out with supplies to look after them. I take four of our best Newfoundlanders, now well broken, in our lightest sledge; and Blake will accompany me with his skates. We have not hands enough to equip a sledge party, and the ice is too unsound for us to attempt to ride with a large team. The thermometer is still 4° above zero."

CHAPTER XII.

LEAPING A CHASM—THE ICE-BELT—CAPE WILLIAM WOOD—CAMP ON THE
FLOES—RETURN OF DEPÔT PARTY—BONSALL'S ADVENTURE—RESULTS—
AN ESCAPE—THE THIRD CACHE—M'GARY ISLAND.

I FOUND little or no trouble in crossing the ice until we passed be-
yond the north-east headland, which I have named Cape William
Wood. But, on emerging into the channel, we found that the
spring tides had broken up the great area around us, and that the
passage of the sledge was interrupted by fissures, which were be-
ginning to break in every direction through the young ice.

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XII.
Travelling
on the ice.

My first effort was of course to reach the land ; but it was un-
fortunately low tide, and the ice-belt rose up before me like a wall.
The pack was becoming more and more unsafe, and I was extremely
anxious to gain an asylum on shore ; for, though it was easy to find
a temporary refuge by retreating to the old floes which studded
the more recent ice, I knew that in doing so we should risk being
carried down by the drift.

The dogs began to flag ; but we had to press them ;—we were
only two men ; and, in the event of the animals failing to leap
any of the rapidly-multiplying fissures, we could hardly expect to
extricate our laden sledge. Three times in less than three hours
my shaft or hinder dogs went in ; and John and myself, who had
been trotting alongside the sledge for sixteen miles were nearly as
tired as they were. This state of things could not last ; and I
therefore made for the old ice to seaward.

We were nearing it rapidly, when the dogs failed in leaping a
chasm that was somewhat wider than the others, and the whole
concern came down in the water. I cut the lines instantly, and,
with the aid of my companion, hauled the poor animals out. We
owed the preservation of the sledge to their admirable docility and
perseverance. The tin-cooking apparatus and the air confined in
the India-rubber coverings kept it afloat till we could succeed in
fastening a couple of seal-skin cords to the cross-pieces at the front
and back. By these John and myself were able to give it an un-

A plunge
in the
water.

CHAPTER
XII.

certain support from the two edges of the opening, till the dogs, after many fruitless struggles, carried it forward at last upon the ice.

Although the thermometer was below zero, and in our wet state we ran a considerable risk of freezing, the urgency of our position left no room for thoughts of cold. We started at a run, men and dogs, for the solid ice; and by the time we had gained it we were steaming in the cold atmosphere like a couple of Nootka Sound vapour-baths.

Rest on the
floe.

We rested on the floe. We could not raise our tent, for it had frozen as hard as a shingle. But our buffalo-robe bags gave us protection; and, though we were too wet inside to be absolutely comfortable, we managed to get something like sleep before it was light enough for us to move on again.

The journey was continued in the same way; but we found, to our great gratification, that the cracks closed with the change of the tide, and at high-water we succeeded in gaining the ice-belt under the cliffs. This belt had changed very much since my journey in September. The tides and frosts together had coated it with ice as smooth as satin, and this glossy covering made it an excellent road. The cliffs discharged fewer fragments in our path, and the rocks of our last journey's experience were now fringed with icicles. I saw with great pleasure that this ice-belt would serve as a highway for our future operations.

Nights on
the ice.

The nights which followed were not so bad as one would suppose from the saturated condition of our equipment. Evaporation is not so inappreciable in this Arctic region as some theorists imagine. By alternately exposing the tent and furs to the air, and beating the ice out of them we dried them enough to permit sleep. The dogs slept in the tent with us, giving it warmth as well as fragrance. What perfumes of nature are lost at home upon our ungrateful senses! How we relished the companionship!

Stopped by
a chasm.

We had averaged twenty miles a day since leaving the brig, and were within a short march of the cape which I have named William Wood, when a broad chasm brought us to a halt. It was in vain that we worked out to seaward, or dived into the shoreward recesses of the bay: the ice everywhere presented the same impassable fissures. We had no alternative but to retrace our steps and seek among the bergs some place of security. We found a camp

for the night on the old floe-ices to the westward, gaining them some time after the darkness had closed in.

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On the morning of the 15th, about two hours before the late sunrise, as I was preparing to climb a berg from which I might have a sight of the road ahead, I perceived far off upon the white snow a dark object, which not only moved, but altered its shape strangely,—now expanding into a long black line, now waving, now gathering itself up into compact mass. It was the returning sledge party. They had seen our black tent of Kedar, and ferried across to seek it.

They were most welcome ; for their absence, in the fearfully open state of the ice, had filled me with apprehensions. We could not distinguish each other as we drew near in the twilight ; and my first good news of them was when I heard that they were singing. On they came, and at last I was able to count their voices, one by one. Thank God, seven ! Poor John Blake was so breathless with gratulation, that I could not get him to blow his signal-horn. We gave them, instead, the good old Anglo-Saxon greeting, “three cheers !” and in a few minutes were among them.

Return of
the depot
party.

They had made a creditable journey, and were, on the whole, in good condition. They had no injuries worth talking about, although not a man had escaped some touches of the frost. Bon-sall was minus a big toe-nail, and plus a scar upon the nose. M'Gary had attempted, as Tom Hickey told us, to *pluck* a fox, it being so frozen as to defy skinning by his knife ; and his fingers had been tolerably frost-bitten in the operation. “They’re very horny, sir, are my fingers,” said M'Gary, who was worn down to a mere shadow of his former rotundity ; “very horny, and they water up like bladders.” The rest had suffered in their feet ; but like good fellows, postponed limping until they reached the ship.

Sufferings
from the
frost.

Within the last three days they had marched fifty-four miles, or eighteen a day. Their sledge being empty, and the young ice north of Cape Bancroft smooth as a mirror, they had travelled, the day before we met them, nearly twenty-five miles. A very remarkable pace for men who had been twenty-eight days in the field.

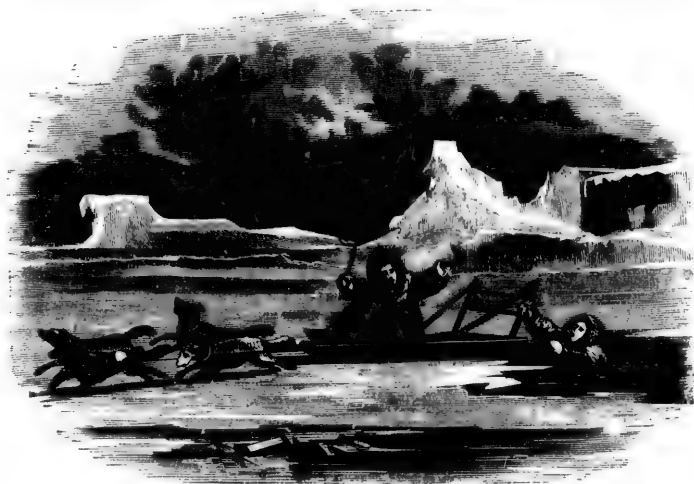
P. te of
traveling
over the
ice.

My supplies of hot food, coffee, and marled beef soup, which I had brought with me, were very opportune. They had almost exhausted their bread ; and, being unwilling to encroach on the depot stores, had gone without fuel in order to save alcohol. Leaving

CHAPTER orders to place my own sledge stores in *cache*, I returned to the
 XII. brig, ahead of the party, with my dog-sledge, carrying Mr. Bonsall
 with me.

Leaping
 ice cracks.

On this return I had much less difficulty with the ice cracks ; my team of Newfoundlanders leaping them in almost every instance, and the impulse of our sledge carrying it across. On one occasion, while we were making these flying leaps, poor Bonsall was tossed out, and came very near being carried under by the rapid tide. He fortunately caught the runner of the sledge as he fell ; and I



NEWFOUNDLAND DOG TEAM.

succeeded, by whipping up the dogs, in hauling him out. He was, of course, wet to the skin ; but we were only twenty miles from the brig, and he sustained no serious injury from his immersion.

I return to my journal.

The spar-
 deck.

"The spar-deck—or, as we call it from its wooden covering, the 'house'—is steaming with the buffalo-robcs, tents, boots, socks, and heterogeneous costumings of our returned parties. We have ample work in repairing these and restoring the disturbed order of our domestic life. The men feel the effects of their journey, but are very content in their comfortable quarters. A pack of cards, grog at dinner, and the promise of a three days' holiday, have made the decks happy with idleness and laughter."

I give the general results of the party; referring to the Appendix CHAPTER XII. for the detailed account of Messrs. M'Gary and Bonsall.

They left the brig, as may be remembered, on the 20th of September, and they reached Cape Russell on the 25th. Near this spot I had, in my former journey of reconnoissance, established a cairn; and here, as by previously concerted arrangement, they left their first cache of pemmican, together with some bread, and alcohol for fuel. Cache near Cape Russell.

On the 28th, after crossing a large bay, they met a low cape about thirty miles to the north-east of the first depôt. Here they made a second cache of a hundred and ten pounds of beef and pemmican, and about thirty of a mixture of pemmican and Indian meal, with a bag of bread.

The day being too foggy for sextant observations for position, or even for a reliable view of the landmarks, they built a substantial cairn, and buried the provision at a distance of ten paces from its centre, bearing by compass, E. by N. $\frac{1}{2}$ N. The point on which this cache stood I subsequently named after Mr. Bonsall, one of the indefatigable leaders of the party. A cairn built over provisions.

I will give the geographical outline of the track of this party in a subsequent part of this narrative, when I have spoken of the after-travel and surveys which confirmed and defined it. But I should do injustice both to their exertions and to the results of them, were I to omit mention of the difficulties which they encountered.

On the twenty-fifth day of their outward journey they met a great glacier, which I shall describe hereafter. It checked their course along the Greenland coast abruptly; but they still endeavoured to make their way outside its edge to seaward, with the commendable object of seeking a more northern point for the provision depôt. This journey was along the base of an icy wall, which constantly threw off its discharging bergs, breaking up the ice for miles around, and compelling the party to ferry themselves and their sledges over the cracks by rafts of ice. Stopped by a glacier.

One of these incidents I give nearly in the language of Mr. Bonsall.

They had camped, on the night of 5th October, under the lee of some large icebergs, and within hearing of the grand artillery of the glacier. The floe on which their tent was pitched was of re-

CHAPTER
VII.A dangerous
adventure.

cent and transparent ice; and the party, too tired to seek a safer asylum, had turned in to rest; when, with a crack like the snap of a gigantic whip, the ice opened directly beneath them. This was, as nearly as they could estimate the time, at about one o'clock in the morning. The darkness was intense; and the cold, about 10° below zero, was increased by a wind which blew from the north-east over the glacier. They gathered together their tent and sleeping furs, and lashed them, according to the best of their ability, upon the sledge. Repeated intonations warned them that the ice was breaking up; a swell, evidently produced by the avalanches from the glacier, caused the platform on which they stood to rock to and fro.

Mr. McGary derived a hope from the stable character of the bergs near them: they were evidently not adrift. He determined to select a flat piece of ice, place the sledge upon it, and, by aid of tent-poles and cooking-utensils, paddle to the old and firm fields which clung to the bases of the bergs. The party waited in anxious expectation until the returning daylight permitted this attempt; and, after a most adventurous passage, succeeded in reaching the desired position.

The highest
latitude
reached
by the
party.

My main object in sending them out was the deposit of provisions, and I had not deemed it advisable to complicate their duties by any organization for a survey. They reached their highest latitude on the 6th of October; and this, as determined by dead reckoning, was in latitude $79^{\circ} 50'$, and longitude $76^{\circ} 20'$. From this point they sighted and took sextant bearings of land to the north,* having a trend or inclination west by north and east by south, at an estimated distance of thirty miles. They were at this time entangled in the icebergs; and it was from the lofty summit of one of these, in the midst of a scene of surpassing desolation, that they made their observations.

They began the third or final cache, which was the main object of the journey, on the 10th of October; placing it on a low island at the base of the large glacier which checked their further march along the coast.

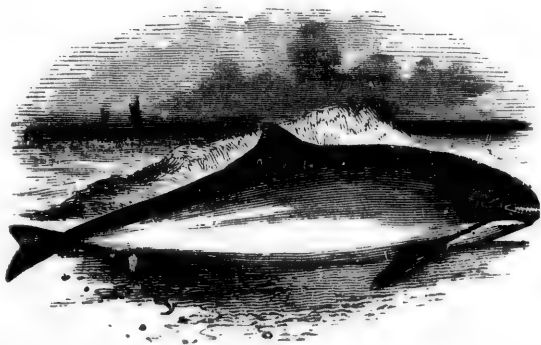
Before adopting this site, they had perseveringly skirted the base

* I may mention that the results of their observations were not used in the construction of our charts, except their interesting sextant bearings. These were both numerous and valuable, but not sustained at the time by satisfactory astronomical observations for position.

of the glacier, in a fruitless effort to cross it to the north. In spite of distressing cold, and the nearly constant winds from the ice-clothed shore, they carried out all my instructions for securing this important dépôt. The stores were carefully buried in a natural excavation among the cliffs; and heavy rocks, brought with great labour, were piled above them. Smaller stones were placed over these, and incorporated into one solid mass by a mixture of sand and water. The power of the bear in breaking up a provision cache is extraordinary; but the Esquimaux to the south had assured me that frozen sand and water, which would wear away the animal's claws, were more effective against him than the largest rocks. Still, knowing how much trouble the officers of Commodore Austin's Expedition experienced from the destruction of their caches, I had ordered the party to resort to a combination of these expedients.³³

They buried here six hundred and seventy pounds of pemmican, forty of Borden's meat discuit, and some articles of general diet; making a total of about eight hundred pounds. They indicated the site by a large cairn, bearing E. $\frac{1}{2}$ S. from the cache, and at the distance of thirty paces. The landmarks of the cairn itself were sufficiently evident, but were afterwards fixed by bearings, for additional certainty.

The island which was so judiciously selected as the seat of this cache was named after my faithful friend and excellent second officer, Mr. James M'Gary of New London.



CHAPTER XIII.

WALRUS HOLES—ADVANCE OF DARKNESS—DARKNESS—THE COLD—"THE ICE BLINK"—FOX-CHASE—ESQUIMAUX HUTS—OCCULTATION OF SATURN—PORTRAIT OF OLD GRIM.

CHAPTER
XIII.

The moon.

"October 28, *Friday*.—The moon has reached her greatest northern declination of about $25^{\circ} 35'$. She is a glorious object: sweeping around the heavens, at the lowest part of her curve, she is still 14° above the horizon. For eight days she has been making her circuit with nearly unvarying brightness. It is one of those sparkling nights that bring back the memory of sleigh-bells and songs and glad communings of hearts in lands that are far away.

"Our fires and ventilation fixtures are so arranged that we are able to keep a mean temperature below of 65° ; and on deck, under our housing, above the freezing-point. This is admirable success; for the weather outside is at 25° below zero, and there is quite a little breeze blowing.

The temperature.

Walrus
holes.

"The last remnant of walrus did not leave us until the second week of last month, when the temperature had sunk below zero. Till then they found open water enough to sport and even sleep in, between the fields of drift, as they opened with the tide; but they had worked numerous breathing-holes besides, in the solid ice nearer shore.* Many of these were inside the capes of Rensselaer Harbour. They had the same circular, cleanly-finished margin as the seals', but they were in much thicker ice, and the radiating lines of fracture round them much more marked. The animal evidently used his own buoyancy as a means of starting the ice.

"Around these holes the ice was much discoloured: numbers of broken clam-shells were found near them, and, in one instance, some gravel, mingled with about half a peck of the coarse shingle of the beach. The use of the stones which the walrus swallows is still

* The walrus often sleeps on the surface of the water while his fellows are playing around him. In this condition I frequently surprised the young ones, whose mothers were asleep by their side.

an interesting question. The ussuk or bearded seal has the same habit.

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XIII.

WALRUS SPORTING.

"November 7, Monday.—The darkness is coming on with insidious steadiness, and its advances can only be perceived by comparing one day with its fellow of some time back. We still read the thermometer at noonday without a light, and the black masses of the hills are plain for about five hours with their glaring patches of snow; but all the rest is darkness. Lanterns are always on the spar-deck, and the lard-lamps never extinguished below. The stars of the sixth magnitude shine out at noonday.

Darkness
increas-
ing.

"Except upon the island of Spitzbergen, which has the advantages of an insular climate and tempered by ocean current Christians have wintered in so high a latitude as this. The Russian sailors who make the encounter there, men inured to hardships and cold. I cannot help thinking of the sad chronicles of the early Dutch, who perished year after year, without leaving a comrade to record their fate.

"Our darkness has ninety days to run before we shall get back again even to the contested twilight of to-day. Altogether, our winter will have been sunless for one hundred and forty days.

Duration
of winter.

"It requires neither the 'Ice-foot' with its growing ramparts,

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nor the rapid encroachments of the night, nor the record of our thermometers, to portend for us a winter of unusual severity. The mean temperatures of October and September are lower than those of Parry for the same months at Melville Island. Thus far we have no indications of that deferred fall cold which marks the insular climate.

"*November 9, Wednesday.*—Wishing to get the altitude of the cliffs on the south-west cape of our bay before the darkness set in thoroughly, I started in time to reach them with my Newfoundlanders at noonday. Although it was but a short journey, the rough shore-ice and a slight wind rendered the cold severe. I had been housed for a week with my wretched rheumatism, and felt that daily exposure was necessary to enable me to bear up against the cold. The thermometer indicated 23° below zero.

The cold.

"Fireside astronomers can hardly realize the difficulties in the way of observations at such low temperatures. The mere burning of the hands is obviated by covering the metal with chamois-skin; but the breath, and even the warmth of the face and body, cloud the sextant-arc and glasses with a fine hoar-frost. Though I had much clear weather, we barely succeeded by magnifiers in reading the verniers. It is, moreover, an unusual feat to measure a baseline in the snow at 55° below freezing.

Poor Hans
the Esqui-
maux.

"*November 16, Wednesday.*—The great difficulty is to keep up a cheery tone among the men. Poor Hans has been sorely homesick. Three days ago he bundled up his clothes and took his rifle, to bid us all good-bye. It turns out that besides his mother there is another one of the softer sex at Fiskernaes that the boy's heart is dreaming of. He looked as wretched as any lover of a milder clime. I hope I have treated his nostalgia successfully, by giving him first a dose of salts, and secondly, promotion. He has now all the dignity of a henchman. He harnesses my dogs, builds my traps, and walks with me on my ice tramps; and, except hunting, is excused from all other duty. He is really attached to me, and as happy as a fat man ought to be.

The "Ice-
Blink."

"*November 21, Monday.*—We have schemes innumerable to cheat the monotonous solitude of our winter. We are getting up a fancy ball; and to-day the first number of our Arctic newspaper, 'The Ice-Blink,' came out, with the motto, 'IN TENEBRIS SERVARE FIDEM.' The articles are by authors of every nautical grade: some

of the best from the fore-castle. I transfer a few of them to my CHAPTER
Appendix. XIII.

"November 22, Tuesday.—I offered a prize to-day of a Guernsey A fox
shirt to the man who held out longest in a 'fox-chase' round the chase.
decks. The rule of the sport was, that 'Fox' was to run a given
circuit between galley and capstan, all hands following on his track ;
every four minutes a halt to be called to blow, and the fox making
the longest run to take the prize ; each of the crew to run as fox
in turn. William Godfrey sustained the chase for fourteen minutes,
and wore off the shirt.

"November 27, Sunday.—I sent out a volunteer party some days A volun-
ago with Mr. Bonsall, to see whether the Esquimaux have returned teer party.
to the huts we saw empty at the cape. The thermometer was in
the neighbourhood of 40° below zero, and the day was too dark to
read at noon. I was hardly surprised when they returned after
camping one night upon the snow. Their sledge broke down, and
they were obliged to leave tents and everything else behind them.
It must have been very cold, for a bottle of Monongahela whisky
of good stiff proof froze under Mr. Bonsall's head.

"Morton went out on Friday to reclaim the things they had A long
left ; and to day at 1 P.M. he returned successful. He reached the journey.
wreck of the former party, making nine miles in three hours,—
pushed on six miles further on the ice-foot,—then camped for the
night ; and, making a sturdy march the next day without luggage,
reached the huts, and got back to his camp to sleep. This jour-
ney of his was, we then thought, really an achievement,—sixty-two
miles in three marches, with a mean temperature of 40° below
zero, and a noonday so dark that you could hardly see a hummock
of ice fifty paces ahead.

"Under more favouring circumstances, Bonsall, Morton, and my- Forced
self made eighty-four miles in three consecutive marches. I go for marches.
the system of forced marches on journeys that are not over a
hundred and fifty miles. A practised walker unencumbered by
weight does twenty miles a day nearly as easily as ten : it is the
uncomfortable sleeping that wears a party out.

"Morton found no natives ; but he saw enough to satisfy me
that the huts could not have been deserted long before we came to
this region. The foxes had been at work upon the animal remains
that we found there, and the appearances which we noted of recent

CHAPTER
XIII.Deserted
huts.

habitation had in a great degree disappeared. Where these Esquimaux have travelled to is matter for conjecture. The dilapidated character of the huts we have seen further to the north seems to imply that they cannot have gone in that direction. They have more probably migrated southward, and, as the spring opens, may return, with the walrus and seal, to their former haunts. We shall see them, I think, before we leave our icy moorings.

Occulta-
tion of
Saturn.

"December 12, Monday.—A grand incident in our great monotony of life! We had an occultation of Saturn at 2 A.M., and got a most satisfactory observation. The emersion was obtained with greater accuracy than could have been expected from the excessive atmospheric undulation of these low temperatures. My little Fraunhöfer sustained its reputation well. We can now fix our position without a cavil.

Total
darkness.

"December 15, Thursday.—We have lost the last vestige of our mid-day twilight. We cannot see print, and hardly paper: the fingers cannot be counted a foot from the eyes. Noonday and midnight are alike, and, except a vague glimmer on the sky that seems to define the hill outlines to the south, we have nothing to tell us that this Arctic world of ours has a sun. In one week more we shall reach the midnight of the year.

"December 22, Thursday.—There is an excitement in our little community that dispenses with reflections upon the solstitial night. 'Old Grim' is missing, and has been for more than a day. Since the lamented demise of Cerberus, my leading Newfoundlander, he has been patriarch of our scanty kennel.

"A cha-
racter."

"Old Grim was 'a character' such as peradventure may at some time be found among beings of a higher order and under a more temperate sky. A profound hypocrite and time-server, he so wriggled his adulatory tail as to secure every one's good graces and nobody's respect. All the spare morsels, the cast-off delicacies of the mess, passed through the winnowing jaws of 'Old Grim,'—an illustration not so much of his eclecticism as his universality of taste. He was never known to refuse anything offered or approachable, and never known to be satisfied, however prolonged and abundant the bounty or the spoil.

"Grim was an ancient dog: his teeth indicated many winters; and his limbs, once splendid tractors for the sledge, were now covered with warts and ringbones. Somehow or other, when the

dogs were harnessing for a journey, 'Old Grim' was sure not to be found ; and upon one occasion, when he was detected hiding away in a cast-off barrel, he incontinently became lame. Strange to say he has been lame ever since, except when the team is away without him.

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XIII.
"Old
Grim."

"Cold disagrees with Grim ; but by a system of patient watchings at the door of our deck-house, accompanied by a discriminating use of his tail, he became at last the one privileged intruder. My seal-skin coat has been his favourite bed for weeks together. Whatever love for an individual Grim expressed by his tail, he could never be induced to follow him on the ice after the cold darkness of the winter set in ; yet the dear good old sinner would wriggle after you to the very threshold of the gangway, and bid you good-bye with a deprecatory wag of the tail which disarmed resentment.

"His appearance was quite characteristic :—his muzzle roofed like the old-fashioned gable of a Dutch garret-window ; his forehead indicating the most meagre capacity of brains that could consist with his sanity as a dog ; his eyes small, his mouth curtained by long black dewlaps, and his hide a mangy russet studded with chestnut-burs ; if he has gone indeed, we 'ne'er shall look upon his like again.' So much for old Grim !

Descrip-
tion of
"Old
Grim."

"When yesterday's party started to take soundings, I thought the exercise would benefit Grim, whose time-serving sojourn on our warm deck had begun to render him over-corpulent. A rope was fastened round him ; for at such critical periods he was obstinate, and even ferocious ; and, thus fastened to the sledge, he commenced his reluctant journey. Reaching a stopping-place after a while, he jerked upon his line, parted it a foot or two from its knot, and, dragging the remnant behind him, started off through the darkness in the direction of our brig. He has not been seen since.

"Grim"
forced to
take exer-
cise.

"Parties are out with lanterns seeking him ; for it is feared that his long cord may have caught upon some of the rude pinnacles of ice which stud our floe, and thus made him a helpless prisoner. The thermometer is at 44° 6' below zero, and old Grim's teeth could not gnaw away the cord.

Search for
"Grim."

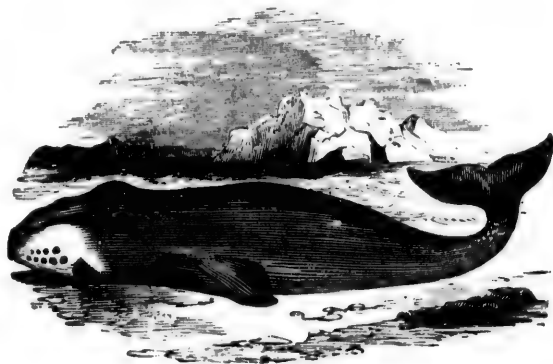
"December 23, Friday.—Our anxieties for old Grim might have interfered with almost anything else ; but they could not arrest our

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celebration of yesterday. Dr. Hayes made us a well-studied oration, and Morton a capital punch ; add to these a dinner of marled beef,—we have two pieces left, for the sun's return and the 4th of July,—and a bumper of champagne all round ; and the elements of our frolic are all registered.

Traces of
" Grim."

" We tracked old Grim to-day through the snow to within six hundred yards of the brig, and thence to that mass of snow-packed sterility which we call the shore. His not rejoining the ship is a mystery quite in keeping with his character."



CHAPTER XIV.

MAGNETIC OBSERVATORY — TEMPERATURES — RETURNING LIGHT — DARK-
NESS AND THE DOGS — HYDROPHOBIA — ICE-CHANGES — THE ICE-FOOT —
THE ICE-BELT — THE SUNLIGHT — MARCH.

My journal for the first two months of 1854 is so devoid of interest, that I spare the reader the task of following me through it. In the darkness and consequent inaction, it was almost in vain that we sought to create topics of thought, and by a forced excitement to ward off the encroachments of disease. Our observatory and the dogs gave us our only regular occupations.

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XIV.
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On the 9th of January we had again an occultation of Saturn. The emersion occurred during a short interval of clear sky, and our observation of it was quite satisfactory; the limit of the moon's disc and that of the planet being well defined: the mist prevented our seeing the immersion. We had a recurrence of the same phenomenon on the 5th of February, and an occultation of Mars on the 14th; both of them observed under favourable circumstances, the latter especially.

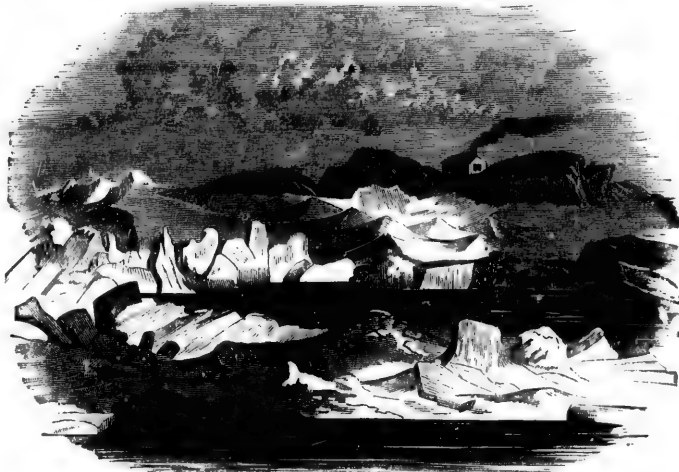
Occulta-
tion of
Saturn.

Our magnetic observations went on; but the cold made it almost impossible to adhere to them with regularity. Our observatory was, in fact, an ice-house of the coldest imaginable description. The absence of snow prevented our backing the walls with that important non-conductor. Fires, buffalo-robies, and an arras of investing sail-cloth, were unavailing to bring up the mean temperature to the freezing-point at the level of the magnetometer;* and it was quite common to find the platform on which the observer stood full 50° lower, (—20°.) Our astronomical observations were less protracted, but the apartment in which they

Magnetic
Observa-
tory.

* We had a good unifilar, that had been loaned to us by Professor Bache, of the Coast Survey; and a dip instrument, a Barrow's circle, obtained from the Smithsonian Institution, through the kindness of Col. Sabine. I owe much to Mr. Sontag Dr. Hayea, and Mr. Bon-sall, who bore the brunt of the term-day observations; it was only toward the close of the season that I was enabled to take my share of them. In addition to these, we had weekly determinations of variation of declination, extending through the twenty-four hours, besides observations of intensity, deflection, inclination, and total force, with careful notations of temperature.

CHAPTER were made was of the same temperature with the outer air. The
XIV. cold, was of course, intense; and some of our instruments, the
dip-circle particularly, became difficult to manage, in consequence
of the unequal contraction of the brass and steel.



THE OBSERVATORY.

Excessive
cold.

On the 17th of January, our thermometers stood at 49° below zero : and on the 20th, the range of those at the observatory was at -64° to -67° . The temperature on the floes was always somewhat higher than at the island ; the difference being due, as I suppose, to the heat conducted from the sea-water, which was at a temperature of $+29^{\circ}$; the suspended instruments being affected by radiation.

On the 5th of February, our thermometers began to show unexampled temperature. They ranged from 60° to 75° below zero, and one very reliable instrument stood upon the taffrail of our brig at -65° . The reduced mean of our best spirit-standards gave -67° , or 99° below the freezing-point of water.

Ether and
chloroform
freeze.

At these temperatures chloric ether became solid, and carefully-prepared chloroform exhibited a granular pellicle on its surface. Spirit of naphtha froze at -54° , and oil of sassafras at -49° . The oil of winter-green was in a flocculent state at -56° , and solid at -63° and -65° .^{*34}

* I repeated my observations on the effects of these low temperatures with great care.

The exhalations from the surface of the body invested the exposed or partially-clad parts with a wreath of vapour. The air had a perceptible pungency upon inspiration, but I could not perceive the painful sensation which has been spoken of by some Siberian travellers. When breathed for any length of time it imparted a sensation of dryness to the air-passages. I noticed that, as it were involuntarily, we all breathed guardedly, with compressed lips.

The first traces of returning light were observed at noon on the 21st of January, when the southern horizon had for a short time a distinct orange tint. Though the sun had perhaps given us a band of illumination before, it was not distinguishable from the cold light of the planets. We had been nearing the sunshine for thirty-two days, and had just reached that degree of mitigated darkness which made the extreme midnight of Sir Edward Parry in latitude $74^{\circ} 47'$. Even as late as the 31st, two very sensitive daguerreotype plates, treated with iodine and bromine, failed to indicate any solar influence when exposed to the southern horizon at noon; the camera being used in-doors, to escape the effects of cold.

The influence of this long, intense darkness was most depressing. Even our dogs, although the greater part of them were natives of the Arctic Circle, were unable to withstand it. Most of them died from an anomalous form of disease, to which, I am satisfied, the absence of light contributed as much as the extreme cold. I give a little extract from my journal of January 20.

"This morning at five o'clock—for I am so afflicted with the insomnia of this eternal night, that I rise at any time between midnight and noon—I went upon deck. It was absolutely dark; the cold net permitting a swinging lamp. There was not a glimmer came to me through the ice-crusts wind-panes of the cabin. While I was feeling my way, half puzzled as to the best method of steering clear of whatever might be before me, two of my Newfoundland dogs put their cold noses against my hand, and instantly commenced the most exuberant antics of satisfaction. It then occurred to me how very dreary and forlorn must these poor animals be, at atmospheres $+ 10^{\circ}$ in-doors and -50° without,—living in darkness, howling at an accidental light, as if it reminded them of the moon,—and with nothing, either of instinct or sensation, to tell them of the passing hours,

CHAPTER
XIV.

First
traces of
returning
light.

Distress-
ing influ-
ences of
the dark-
ness.

CHAPTER
XIV.Effects of
darkness
on dogs.

or to explain the long-lost daylight. They shall see the lanterns more frequently."

I may recur to the influence which our long winter night exerted on the health of these much-valued animals. The subject has some interesting bearings ; but I content myself for the present with transcribing another passage from my journal, of a few days later.

"*January 25, Wednesday.*—The mouse-coloured dogs, the leaders of my Newfoundland team, have for the past fortnight been



THE DECKS BY LAMPLIGHT.

nursed like babies. No one can tell how anxiously I watch them. They are kept below, tended, fed, cleansed, caressed, and *doctored*, to the infinite discomfort of all hands. To-day I give up the last hope of saving them. Their disease is as clearly mental as in the case of any human being. The more material functions of the poor brutes go on without interruption : they eat voraciously, retain their strength, and sleep well. But all the indications beyond this go to prove that the original epilepsy, which was the first

manifestation of brain disease among them, has been followed by a true lunacy. They bark frenziedly at nothing, and walk in straight and curved lines with anxious and unwearying perseverance.

CHAPTER
XIV.

Madness in
dogs produced by
darkness.

"They fawn on you, but without seeming to appreciate the notice you give them in return; pushing their head against your person, or oscillating with a strange pantomime of fear. Their most intelligent actions seem automatic: sometimes they claw you, as if trying to burrow into your seal-skins; sometimes they remain for hours in moody silence, and then start off howling as if pursued, and run up and down for hours.

"So it was with poor Flora, our 'wise dog.' She was seized with the endemic spasms and, after a few wild, violent paroxysms, lapsed into a lethargic condition, eating voraciously, but gaining no strength. This passing off, the same crazy wildness took possession of her, and she died of brain disease (*arachnoidal effusion*) in about six weeks. Generally, they perish with symptoms resembling locked-jaw in less than thirty-six hours after the first attack."

On the 22d, I took my first walk on the great floe, which had been for so long a time a crude, black labyrinth. I give the appearance of things in the words of my journal:—

Ice
changes.

"The floe has changed wonderfully. I remember it sixty-four days ago, when our twilight was as it now is, a partially snow-patched plain, chequered with ridges of sharp hummocks, or a series of long icy levels, over which I coursed with my Newfoundlanders. All this has gone. A lead-coloured expanse stretches its 'rounding gray' in every direction, and the old angular hummocks are so softened down as to blend in rolling dunes with the distant obscurity. The snow upon the levels shows the same remarkable evaporation. It is now in crisp layers, hardly six inches thick, quite undisturbed by drift. I could hardly recognise any of the old localities.

We can trace the outline of the shore again, and even some of the long horizontal bands of its stratification. The cliffs of Sylvia Mountain, which open toward the east, are, if anything, more covered with snow than the ridges fronting west across the bay.

"But the feature which had changed most was the ice-belt. When I saw it last, it was an investing zone of ice, coping the margin of

CHAPTER
XIV.

the floe. The constant accumulation by overflow of tides and freezing has turned this into a bristling wall, 20 feet high, (20 ft. 8 in.) No language can depict the chaos at its base. It has been rising and falling throughout the long winter, with a tidal wave of 13 perpendicular feet. The fragments have been tossed into every possible confusion, rearing up into fantastic equilibrium, surging in long inclined planes, dipping into dark valleys, and piling in contorted hills, often high above the ice-foot.

Ice crags
and walls.

"The frozen rubbish has raised the floe itself, for a width of 50 yards, into a broken level of crags. To pass over this to our rocky island, with its storehouse, is a work of ingenious pilotage and clambering, only practicable at favouring periods of the tide, and often impossible for many days together. Fortunately for our observatory, a long table of heavy ice has been so nicely poised on the crest of the ice-foot, that it swings like a seesaw with the changing water-level, and has formed a moving beach to the island, on which the floes could not pile themselves. Shoreward between Medary and the 'terrace,' the shoal-water has reared up the ice-fields, so as to make them almost as impassable as the floes; and between Fern Rock and the gravestone, where I used to pass with my sledges, there is built a sort of garden-wall of crystal 20 feet high. It needs no iron spikes or broken bottles to defend its crest from trespassers.

"Mr. Sontag amuses me quite as much as he does himself with his daily efforts to scale it."

My next extract is of a few days later.

Ice-foot.

"*February 1, Wednesday.*—The ice-foot is the most wonderful and unique characteristic of our high northern position. The spring-tides have acted on it very powerfully, and the coming day enables us now to observe their stupendous effects. This ice-belt, as I have sometimes called it, is now 24 feet in solid thickness by 65 in mean width; the second, or appended ice, is 38 feet wide; and the third 34 feet. All three are ridges of immense ice-tables, serried like the granite blocks of a rampart, and investing the rocks with a triple circumvallation. We know them as the belt-ices.

"The separation of the true ice-foot from our floe was at first a simple interval, which by the recession and advance of the tides gave a movement of about six feet to our brig. Now, however,

the compressed ice grinds closely against the ice-foot, rising into inclined planes, and freezing so as actually to push our floe further and further from the shore. The brig has already moved 28 feet, without the slightest perceptible change in the cradle which imbeds her."

I close my notice of these dreary months with a single extract more. It is of the date of February the 21st.

"We have had the sun, for some days, silvering the ice between the headlands of the bay; and to-day, toward noon, I started out to be the first of my party to welcome him back. It was the longest walk and toughest climb that I have had since our imprisonment; and scurvy and general debility have made me short o' wind.' But I managed to attain my object. I saw him once more; and upon a projecting crag nestled in the sunshine. It was like bathing in perfumed water."

The month of March brought back to us the perpetual day. The sunshine had reached our deck on the last day of February; we needed it to cheer us. We were not as pale as my experience in Lancaster Sound had foretold; but the scurvy-spots that mottled our faces gave sore proof of the trials we had undergone. It was plain that we were all of us unfit for arduous travel on foot at the intense temperatures of the nominal spring; and the return of the sun, by increasing the evaporation from the floes, threatened us with a recurrence of still severer weather.

But I felt that our work was unfinished. The great object of the expedition challenged us to a more northward exploration. My dogs, that I had counted on so largely, the nine splendid Newfoundlanders and thirty-five Esquimaux of six months before, had perished; there were only six survivors of the whole pack, and one of these was unfit for draught. Still, they formed my principal reliance, and I busied myself from the very beginning of the month in training them to run together. The carpenter was set to work upon a small sledge, on an improved model, and adapted to the reduced force of our team; and, as we had exhausted our stock of small cord to lash its parts together, Mr. Brooks rigged up a miniature rope-walk, and was preparing a new supply from part of the material of our deep-sea lines. The operations of shipboard, however, went on regularly; Hans, and

CHAPTER
XIV.

Welcom-
ing back
the sun.

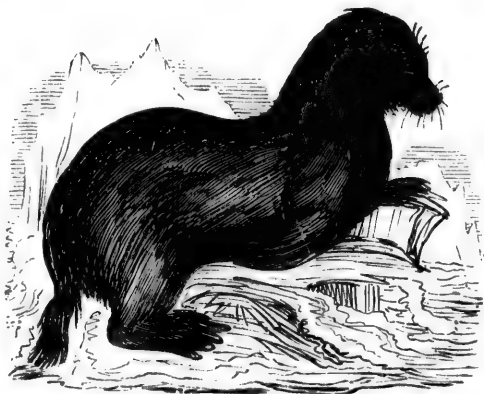
Return of
perpetual
day.

Prepara-
tions for a
further
search.

CHAPTER occasionally Petersen, going out on the hunt, though rarely returning successful.
XIV.

Meanwhile we talked encouragingly of spring hopes and summer prospects, and managed sometimes to force an occasion for mirth out of the very discomforts of our unyielding winter life.

This may explain the tone of my diary.



return-

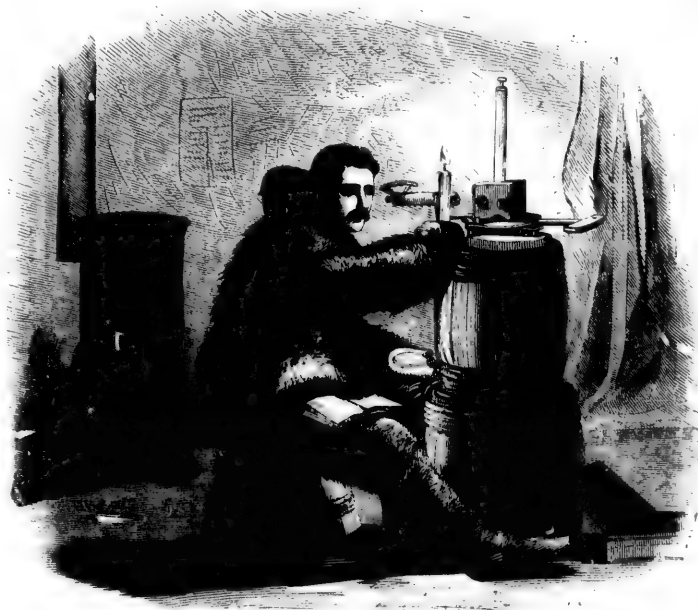
l sum-
occasion
winter

CHAPTER XV.

ARCTIC OBSERVATIONS—TRAVEL TO OBSERVATORY—ITS HAZARDS—ARCTIC
LIFE—THE DAY—THE DIET—THE AMUSEMENTS—THE LABOURS—THE
TEMPERATURE—THE “EIS-FOD”—THE ICE-BELT—THE ICE-BELT EN-
CROACHING—EXPEDITION PREPARING—GOOD-BYE—A SURPRISE—A
SECOND GOOD-BYE.

“*March 7, Tuesday.*—I have said very little in this business journal about our daily Arctic life. I have had no time to draw pictures. CHAPTER
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“But we have some trials which might make up a day’s adven- Daily
trials.



THE MAGNETIC OBSERVATORY.

tures. Our Arctic observatory is cold beyond any of its class, Kesan, Pulkowa, Toronto, or even its shifting predecessors, Bossetop

CHAPTER
XV.A magnetic
term-day.

and Melville Island. Imagine it a term-day, a magnetic term-day.

"The observer, if he were only at home, would be the 'observed of all observers.' He is clad in a pair of seal-skin pants, a dog-skin cap, a reindeer jumper, and walrus boots. He sits upon a box that once held a transit instrument. A stove, glowing with at least a bucketful of anthracite, represents pictorially a heating apparatus, and reduces the thermometer as near as may be to 10° below zero. One hand holds a chronometer, and is left bare to warm it; the other luxuriates in a fox-skin mitten. The right hand and the left take it 'watch and watch about.' As one burns with cold, the chronometer shifts to the other, and the mitten takes its place.

"Perched on a pedestal of frozen gravel is a magnetometer; stretching out from it, a telescope; and, bending down to this, an abject human eye. Every six minutes said eye takes cognizance of a finely-divided arc, and notes the result in a cold memorandum-book. This process continues for twenty-four hours, two sets of eyes taking it by turns; and, when twenty-four hours are over, term-day is over too.

Labours
and suffer-
ings from
cold in the
observa-
tory.

"We have such frolics every week. I have just been relieved from one, and after a few hours am to be called out of bed in the night to watch and dot again. I have been engaged in this way when the thermometer gave 20° above zero at the instrument, 20° below at two feet above the floor, and 43° below at the floor itself; on my person, facing the little lobster-red fury of a stove, 94° above; on my person, away from the stove, 10° below zero. 'A grateful country' will of course appreciate the value of these labours, and, as it cons over hereafter the four hundred and eighty results which go to make up our record for each week, will never think of asking, '*Cui bono* all this?'

"But this is no adventure. The adventure is the travel to and fro. We have night now only half the time; and half the time can go and come with eyes to help us. It was not so a little while since.

Travel to
the obser-
vatory.

"Taking an ice-pole in one hand, and a dark lantern in the other, you steer through the blackness for a lump of greater blackness, the Fern Rock knob. Stumbling over some fifty yards, you come to a wall; your black knob has disappeared, and nothing

but grey indefinable ice is before you. Turn to the right; plant your pole against that inclined plane of slippery smoothness, and jump to the hummock opposite; it is the same hummock you skinned your shins upon the last night you were here. Now wind along, half serpentine, half zigzag, and you cannot mistake that twenty feet wall just beyond, creaking and groaning, and even nodding its crest with a grave cold welcome; it is the 'seam of the second ice.' Tumble over it at the first gap, and you are upon the first ice; tumble over that and you are at the ice-foot; and there is nothing else now between you and the rocks, and nothing after them between you and the observatory.

CHAPTER
XV.
Dangers of
travel.

"But be a little careful as you come near this ice-foot. It is munching all the time at the first ice, and you have to pick your way over the masticated fragments. Don't trust yourself to the half-balanced, half-fixed, half-floating ice-lumps, unless you relish a bath like Marshal Suwarrow's—it might be more pleasant if you were sure of getting out—but feel your way gingerly, with your pole held crosswise, not disdaining lowly attitudes—hands and knees, or even full length. That long wedge-like hole just before you, sending up its puffs of steam into the cold air, is the 'seam of the ice-foot;' you have only to jump it and you are on the smooth, level ice-foot itself. Scramble up the rocks now, get on your wooden shoes, and go to work observing an oscillating needle for some hours to come.

Scrambling over the ice-foot.

"Astronomy, as it draws close under the pole-star, cannot lavish all its powers of observation on things above. It was the mistake of Mr. Sontag some months ago, when he wandered about for an hour on his way to the observatory, and was afraid after finding it to try and wander back. I myself had a slide down an inclined plane, whose well-graded talus gave me ample time to contemplate the contingencies at its base; a chasm peradventure, for my ice-pole was travelling ahead of me and stopped short with a clang; or it might be a pointed hummock—there used to be one just below; or by good luck it was only a water-pool, in which my lantern made the glitter. I exulted to find myself in a cushion of snow.

Difficulties of astronomical observation under the pole-star.

"*March 9, Thursday.*—How do we spend the day when it is not term-day, or rather the twenty-four hours? for it is either

CHAPTER
XV.

all day here, or all night, or a twilight mixture of both. How do we spend the twenty-four hours?

Morning.

"At six in the morning M'Gary is called, with all hands who have *slept in*. The decks are cleaned, the ice-hole opened, the refreshing beef-nets examined, the ice-tables measured, and things aboard put to rights. At half-past seven all hands rise, wash on deck, open the doors for ventilation, and come below for breakfast. We are short of fuel, and therefore cook in the cabin. Our

Breakfast.

breakfast, for all fare alike, is hard tack, pork, stewed apples frozen like molasses-candy, tea and coffee, with a delicate portion of raw potato. After breakfast the smokers take their pipe till nine; then all hands turn to, idlers to idle and workers to work; Ohlsen to his bench, Brooks to his 'preparations' in canvas, M'Gary to play tailor, Whipple to make shoes, Bonsall to tinker, Baker to skin birds, and the rest to the 'Office!' Take a look into the Arctic Bureau! One table, one salt-pork lamp with rusty chlorinated flame, three stools, and as many waxen-faced men with their legs drawn up under them, the deck at zero being too cold for the feet. Each has his department: Kane is writing, sketching, and projecting maps; Hayes copying logs and meteorologicals; Son-tag reducing his work at Fern Rock. A fourth, as one of the working members of the hive, has long been defunct; you will find him in bed, or studying 'Littell's Living Age.' At twelve a business round of inspection, and orders enough to fill up the day with work. Next, the drill of the Esquimaux dogs—my own peculiar recreation—a dog-trot specially refreshing to legs that creak with every kick, and rheumatic shoulders that chronicle every descent of the whip. And so we get on to dinner-time—the occasion of another gathering, which misses the tea and coffee of breakfast, but rejoices in pickled cabbage and dried peaches instead.

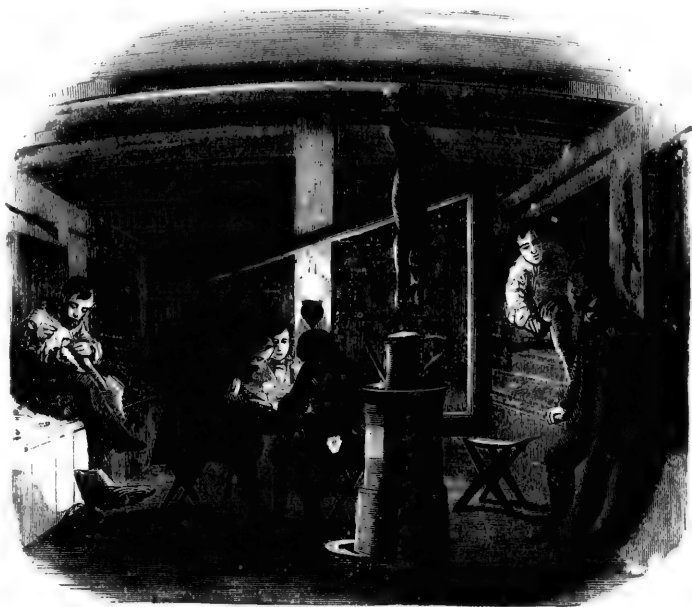
Employ-
ments.

Dinner.

"At dinner as at breakfast the raw potato comes in, our hygienic luxury. Like doctor-stuff generally, it is not as appetizing as desirable. Grating it down nicely, leaving out the ugly red spots liberally, and adding the utmost oil as a lubricant, it is as much as I can do to persuade the mess to shut their eyes and bolt it, like Mrs. Squeers's molasses and brimstone at Dotheboys Hall. Two absolutely refuse to taste it. I tell them of the Silesians using its leaves as spinach, of the whalers in the South Seas

getting drunk on the molasses which had preserved the large CHAPTER
potatoes of the Azores—I point to this gum, so fungoid and angry XV.
the day before yesterday, and so flat and amiable to-day—all by a
potato poultice; my eloquence is wasted; they persevere in reject-
ing the admirable compound.

"Sleep, exercise, amusement, and work at will, carry on the day Supper.
till our six o'clock supper, a meal something like breakfast and
something like dinner, only a little more scant; and the officers
come in with the reports of the day. Dr. Hayes shows me the
log, I sign it; Sontag the weather, I sign the weather; Mr. Bon-
sall the tides and thermometers. Thereupon comes in mine ancient,



WINTER LIFE ON BOARD SHIP.

Brooks; and I enter in his journal No. 3 all the work done under
his charge, and discuss his labours for the morrow.

"M'Gary comes next, with the cleaning-up arrangement, inside, Close of
the day.
outside, and on decks; and Mr. Wilson follows with ice-measure-
ments. And last of all comes my own record of the day gone by;

CHAPTER every line, as I look back upon its pages, giving evidence of a weak-
 XV. ened body and harassed mind.

Amuse- "We have cards sometimes, and chess sometimes,—and a few
 ments. magazines, Mr. Littell's thoughtful present to cheer away the
 evening.

"March 11, *Saturday*.—All this seems tolerable for common-
 place routine; but there is a lack of comfort which it does not
 tell of. Our fuel is limited to three bucketfuls of coal a-day, and
 our mean temperature outside is 40° below zero; 46° below as I
 write. London Brown Stout, and somebody's Old Brown Sherry,
 freeze in the cabin lockers; and the carlines overhead are hung
 with tubs of chopped ice, to make water for our daily drink. Our
 lamps cannot be persuaded to burn salt lard; our oil is exhausted;
 and we work by muddy tapers of cork and cotton floated in saucers.
 We have not a pound of fresh meat, and only a barrel of potatoes
 left.

Disease. "Not a man now, except Pierre and Morton, is exempt from
 scurvy; and, as I look around upon the pale faces and haggard
 looks of my comrades, I feel that we are fighting the battle of life
 at disadvantage, and that an Arctic night and an Arctic day age a
 man more rapidly and harshly than a year anywhere else in all this
 weary world.

Prepara- "March 13, *Monday*.—Since January, we have been working at
 tions for the sledges and other preparations for travel. The death of my
 travel. dogs, the rugged obstacles of the ice, and the intense cold, have
 obliged me to re-organize our whole equipment. We have had to
 discard all our India-rubber fancy-work; canvas shoe-making, fur-
 socking, sewing, carpentering, are all going on; and the cabin, our
 only fire-warmed apartment, is the workshop, kitchen, parlour,
 and hall. Pemican cases are thawing on the lockers; buffalo
 robes are drying around the stove; camp equipments occupy the
 corners; and our woe-begone French cook, with an infinitude of
 useless saucepans, insists on monopolizing the stove.

Mean tem- "March 15, *Wednesday*.—The mean temperature of the last five
 perature. days has been,—

March 10.....	—46°.03
11.....	—45°.60
12.....	—46°.64
13.....	—46°.56
14.....	—46°.65

giving an average of $-46^{\circ} 30'$, with a variation between the extremes of less than three-quarters of a degree.

CHAPTER
XV.

"These records are remarkable. The coldest month of the Polar year has heretofore been February; but we are evidently about to experience for March a mean temperature not only the lowest of our own series, but lower than that of any other recorded observations.

"This anomalous temperature seems to disprove the idea of a diminished cold as we approach the Pole. It will extend the isotherm of the solstitial month higher than ever before projected.

"The mean temperature of Parry for March (in lat. $74^{\circ} 30'$) was -29° ; our own will be at least 41° below zero.

Mean tem-
perature.

"At such temperatures the ice or snow covering offers a great resistance to the sledge-runners. I have noticed this in training my dogs. The dry snow in its finely-divided state resembles sand, and the runners creak as they pass over it. Baron Wrangell notes the same fact in Siberia at -40° .

"The difficulties of draught, however, must not interfere with my parties. I am only waiting until the sun, now 13° high at noon, brings back a little warmth to the men in sleeping. The mean difference between bright clear sunshine and shade is now 5° . But on the 10th, at noon, the shade gave $-42^{\circ} 2'$, and the sun -28° ; a difference of more than 14° . This must make an impression before long.

Slight re-
turn of
warmth.

"*March 17, Friday.*—It is nine o'clock, P.M., and the thermometer outside at -46° . I am anxious to have this depôt party off; but I must wait until there is a promise of milder weather. It must come soon. The sun is almost at the equator. On deck, I can see to the northward all the bright glare of sunset, streaming out in long bands of orange through the vapours of the ice-foot, and the frost-smoke exhaling in wreaths like those from the house-chimneys a man sees in the valleys as he comes down a mountain-side."

I must reserve for my official report the detailed story of this ice-foot and its changes.

The name is adopted on board ship from the Danish "Eis-fod," to designate a zone of ice which extends along the shore from the untried north beyond us almost to the Arctic circle. To the south it breaks up during the summer months, and disappears as high as

The "Eis-
fod."

CHAPTER
XV.Highway
of ice.

Upernavik or even Cape Alexander ; but in this our high northern winter harbour, it is a perennial growth, clinging to the bold faces of the cliffs, following the sweeps of the bays and the indentations of rivers.

This broad platform, although changing with the seasons, never disappears. It served as our highway of travel, a secure and level sledge-road, perched high above the grinding ice of the sea, and adapting itself to the tortuosities of the land. As such I shall call it the "ice-belt."

I was familiar with the Arctic shore-ices of the Asiatic and American explorers, and had personally studied the same formations in Wellington Channel, where, previous to the present voyage, they might have been supposed to reach their greatest development. But this wonderful structure has here assumed a form which none of its lesser growths to the south had exhibited. As a physical feature, it may be regarded as hardly second, either in importance or prominence, to the glacier ; and as an agent of geological change, it is in the highest degree interesting and instructive.

The ice-
belt mea-
sures the
severity of
the year.

Although subject to occasional disruption, and to loss of volume from evaporation and thaws, it measures the severity of the year by its rates of increase. Rising with the first freezings of the late summer, it crusts the sea-line with curious fretwork and arabesques ; a little later, and it receives the rude shock of the drifts, and the collision of falling rocks from the cliffs which margin it ; before the early winter has darkened, it is a wall, resisting the grinding floes ; and it goes on gathering increase and strength from the successive freezing of the tides, until the melted snows and water-torrents of summer for a time check its progress. During our first winter at Rensselaer Harbour, the ice-belt grew to three times the size which it had upon our arrival ; and, by the middle of March, the islands and adjacent shores were hemmed in by an investing plane of nearly 30 feet high (27 feet) and 120 wide.

The ice-foot at this season was not, however, an unbroken level. It had, like the floes, its barricades, serried and irregular—which it was a work of great labour and some difficulty to traverse. Our stores were in consequence nearly inaccessible ; and, as the ice foot still continued to extend itself, piling ice-table upon ice table, it threatened to encroach upon our anchorage and peril the safety

of the vessel. The ridges were already within twenty feet of her, and her stern was sensibly lifted up by their pressure. We had, indeed, been puzzled for six weeks before, by remarking that the floe we were imbedded in was gradually receding from the shore; and had recalled the observation of the Danes of Upernavik, that their nets were sometimes forced away strangely from the land. The explanation is, perhaps, to be found in the alternate action of the tides and frost; but it would be out of place to enter upon the discussion here.

CHAPTER

Ice-floe
receding.

"*March 18, Saturday.*—To-day our spring-tides gave to the massive ice which sustains our little vessel a rise and fall of seventeen feet. The crunching and grinding, the dashing of the water, the gurgling of the eddies, and the toppling over of the nicely-poised ice-tables, were unlike the more brisk dynamics of hummock action, but conveyed a more striking expression of power and dimension.

"The thermometer at four o'clock in the morning was minus 49°; too cold still, I fear, for our sledgenen to set out. But we packed the sledge and strapped on the boat, and determined to see how she would drag. Eight men attached themselves to the lines, but were scarcely able to move her. This may be due in part to an increase of friction produced by the excessive cold, according to the experience of the Siberian travellers; but I have no doubt it is principally caused by the very thin runners of our Esquimaux sledge cutting through the snow-crust.

Prepara-
tions for
travel.

"The excessive refraction this evening, which entirely lifted up the northern coast as well as the icebergs, seems to give the promise of milder weather. In the hope that it may be so, I have fixed on to-morrow for the departure of the sledge, after very reluctantly dispensing with more than two hundred pounds of her cargo, besides the boat. The party think they can get along with it now.

"*March 20, Monday.*—I saw the dépôt party off yesterday. They gave the usual three cheers, with three for myself. I gave them the whole of my brother's great wedding-cake and my last two bottles of Port, and they pulled the sledge they were harnessed to famously. But I was not satisfied. I could see it was hard work; and, besides, they were without the boat, or enough extra pemmican to make their deposit of importance. I followed them there-

The depar-
ture.

CHAPTER XV. fore, and found that they encamped at 8 P.M. only five miles from the brig.

"When I overtook them I said nothing to discourage them, and gave no new orders for the morning; but after laughing at good Ohlsen's rueful face, and listening to all Petersen's assurances that the cold and nothing but the cold retarded his Greenland sledge, and that no sledge of any other construction could have been moved at all through -40° snow, I quietly bade them good-night, leaving all hands under their buffaloes.

A sled prepared.

"Once returned to the brig, all my tired remainder-men were summoned; a large sled with broad runners, which I had built somewhat after the neat Admiralty model sent me by Sir Francis Beaufort, was taken down, scraped, polished, lashed, and fitted with trackropes and *rue-raddies*—the lines arranged to draw as near as possible in a line with the centre of gravity. We made an entire cover of canvas, with snugly-adjusted fastenings; and by one in the morning we had our discarded excess of pemmican and the boat once more in stowage.

"Off we went for the camp of the sleepers. It was very cold, but a thoroughly Arctic night—the snow just tinged with the crimson stratus above the sun, which, equinoctial as it was, glared beneath the northern horizon like a smelting-furnace. We found the tent of the party by the bearings of the stranded bergs. Quietly and stealthily we hauled away their Esquimaux sledge, and placed her cargo upon the *Faith*. Five men were then rue-raddied to the track-lines; and with the whispered word, 'Now, boys, when Mr. Brooks gives his third snore, off with you!' off they went, and the *Faith* after them, as free and nimble as a volunteer. The trial was a triumph. We awakened the sleepers with three cheers; and, giving them a second good-bye, returned to the brig, carrying the dishonoured vehicle along with us. And now, battling mishaps past anticipation, I shall have a *dépôt* for my long trip.

A night surprise.

Last sight of the party.

"The party were seen by M'Gary from aloft, at noon to-day, moving easily, and about twelve miles from the brig. The temperature too is rising, or rather unmistakably about to rise. Our lowest was -43° , but our highest reached -22° ; this extreme range, with the excessive refraction and a gentle misty air from about the south-east, makes me hope that we are going to have a warm spell. The party is well off. Now for my own to follow them."

CHAPTER XVI.

PREPARATION—TEMPERATURES—ADVENTURE—AN ALARM—PARTY ON THE FLOES—RESCUE PARTY—LOST ON THE FLOES—PARTY FOUND—RETURN—FREEZING—RETURNING CAMP—A BIVOUAC—EXHAUSTED—ESCAPE—CONSEQUENCES.

"*March 21, Tuesday.*—All hands at work house cleaning. Thermometer—48°. Visited the fox-traps with Hans in the afternoon, and found one poor animal frozen dead. He was coiled up, with his nose buried in his bushy tail, like a fancy foot-muff, or the *prie-dieu* of a royal sinner. A hard thing about his fate was that he had succeeded in effecting his escape from the trap, but, while working his way underneath, had been frozen fast to a smooth stone by the moisture of his own breath. He was not probably aware of it before the moment when he sought to avail himself of his hard-gained liberty. These saddening thoughts did not impair my appetite at supper, where the little creature looked handsomer than ever.

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XVI.

Fox frozen
in a trap.

"*March 22, Wednesday.*—We took down the forward bulkhead to-day, and moved the men aft, to save fuel. All hands are still at work clearing up the decks, the scrapers sounding overhead, and the hickory brooms crackling against the frozen woodwork. Afternoon comes, and M'Gary brings from the traps two foxes, a blue and a white. Afternoon passes, and we skin them. Evening passes, and we eat them. Never were foxes more welcome visitors, or treated more like domestic animals.

Welcome
visitors.

"*March 23, Thursday.*—The accumulated ice upon our housing shows what the condensed and frozen moisture of the winter has been. The average thickness of this curious deposit is five inches, very hard and well crystallized. Six cart loads have been already chopped out, and about four more remain.

"It is very far from a hardship to sleep under such an ice-roof as this. In a climate where the intense cold approximates all ice to granite, its thick air-tight coating contributes to our warmth, gives a beautiful and cheerful lustre to our walls, and condenses

An ice-
roof

CHAPTER any vapours which our cooks allow to escape the funnels. I only
XVI. remove it now because I fear the effects of damp in the season of
sunshine.

"*March 27, Monday.*—We have been for some days in all the flurry of preparation for our exploration trip: buffalo-hides, leather, and tailoring utensils everywhere. Every particle of fur comes in play for mits, and muffs, and wrappers. Poor Flora is turned into a pair of socks, and looks almost as pretty as when she was heading the team.

Intense
cold.

"The wind to-day made it intensely cold. In riding but four miles to inspect a fox-trap, the movement froze my cheeks twice. We avoid masks with great care, reserving them for the severer weather; the jaw when protected recovers very soon the sensibility which exposure has subdued.

"Our party is out in its ninth day. It has had some trying weather:—

On the 19th.....	—42°.3
20th.....	—35°.4
21st.....	—19°.37
22d.....	— 7°.47
23d.....	— 9°.07
24th.....	—18°.32
25th.....	—34°.80
26th.....	—42°.8
27th.....	—34°.38

of mean daily temperature; making an average of 27°.13 below zero.

Inspecting
the ice.

"*March 29, Wednesday.*—I have been out with my dog-sledge inspecting the ice to-day from the north-western headland. There seems a marked difference between this sound and other estuaries, in the number of icebergs. Unlike Prince Regent's, or Wellington, or Lancaster Sounds, the shores here are lined with glaciers, and the water is everywhere choked and harassed by their discharges. This was never so apparent to me as this afternoon. The low sun lit up line after line of lofty bergs, and the excessive refraction elevated them so much, that I thought I could see a chain of continuous ice running on toward the north until it was lost in illimitable distance.

"*March 31, Friday.*—I was within an ace to-day of losing my dogs, every one of them. When I reached the ice foot, they

balked ;—who would not?—the tide was low, the ice rampant, and a jump of four feet necessary to reach the crest. The howling of the wind and the whirl of the snow-drift confused the poor creatures ; but it was valuable training for them, and I strove to force them over. Of course I was on foot, and they had a light load behind them. ‘Now, Stumpy! Now, Whitey!’ ‘Good dogs!’ ‘Tu-lee-ee-ee! Tuh!’ They went at it like good stanch brutes, and the next minute the whole team was rolling in a lump, some sixteen feet below me, in the chasm of the ice-foot. The drift was such that at first I could not see them. The roaring of the tide, and the subdued wail of the dogs, made me fear for the worst. I had to walk through the broken ice, which rose in toppling spires over my head, for nearly fifty yards, before I found an opening to the ice face, by which I was able to climb down to them. A few cuts of a sheath-knife released them, although the caresses of the dear brutes had like to have been fatal to me, for I had to straddle with one foot on the fast ice and the other on loose piled rubbish. But I got a line attached to the cross-pieces of the sledge-runners, flung it up on the ice-foot, and then piloted my dogs out of their slough. In about ten minutes we were sweating along at eight miles an hour.”

CHAPTER
XVI.
Leaping a
chasm.

Everything looked promising, and we were only waiting for intelligence that our advance party had deposited its provisions in safety to begin our transit of the bay. Except a few sledge-lashings and some trifling accoutrements to finish, all was ready.

We were at work cheerfully, sewing away at the skins of some moccasins by the blaze of our lamps, when, toward midnight, we heard the noise of steps above, and the next minute Sontag, Ohlsen, and Petersen, came down into the cabin. Their manner startled me even more than their unexpected appearance on board. They were swollen and haggard, and hardly able to speak.

An alarm

Their story was a fearful one. They had left their companions in the ice, risking their own lives to bring us the news ; Brooks, Baker, Wilson, and Pierre, were all lying frozen and disabled. Where? They could not tell ; somewhere in among the hummocks to the north and east ; it was drifting heavily round them when they parted. Irish Tom had stayed by to feed and care for the others ; but the chances were sorely against them. It was in vain

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to question them further. They had evidently travelled a great distance, for they were sinking with fatigue and hunger, and could hardly be rallied enough to tell us the direction in which they had come.

My first impulse was to move on the instant with an unencumbered party; a rescue, to be effective or even hopeful, could not be too prompt. What pressed on my mind most was where the sufferers were to be looked for among the drifts. Ohlsen seemed to have his faculties rather more at command than his associates, and I thought that he might assist us as a guide; but he was sinking with exhaustion, and if he went with us we must carry him.

A hasty
departure.

There was not a moment to be lost. While some were still busy with the new-comers and getting ready a hasty meal, others were rigging out the *Little Willie* with a buffalo cover, a small tent, and a package of pemmican; and, as soon as we could hurry through our arrangements, Ohlsen was strapped on in a fur bag, his legs wrapped in dog-skins and eider down, and we were off upon the ice. Our party consisted of nine men and myself. We carried only the clothes on our backs. The thermometer stood at -46° , seventy-eight below the freezing point.



THE RESCUE PARTY.

A well-known peculiar tower of ice, called by the men the "Pinnacy Berg," served as our first landmark; other icebergs of

colossal size, which stretched in long beaded lines across the bay, helped to guide us afterward; and it was not until we had travelled for sixteen hours that we began to lose our way.

We knew that our lost companions must be somewhere in the area before us, within a radius of forty miles. Mr. Ohlsen, who had been for fifty hours without rest, fell asleep as soon as we began to move, and awoke now with unequivocal signs of mental disturbance. It became evident that he had lost the bearing of the icebergs, which in form and colour endlessly repeated themselves; and the uniformity of the vast field of snow utterly forbade the hope of local landmarks.

Pushing ahead of the party, and clambering over some rugged ice-piles, I came to a long level floe, which I thought might probably have attracted the eyes of weary men in circumstances like our own. It was a light conjecture; but it was enough to turn the scale, for there was no other to balance it. I gave orders to abandon the sledge, and disperse in search of footmarks. We raised our tent, placed our pemmican in *cache*, except a small allowance for each man to carry on his person; and poor Ohlsen, now just able to keep his legs, was liberated from his bag. The thermometer had fallen by this time to $-49^{\circ}.3$, and the wind was setting in sharply from the north-west. It was out of the question to halt; it required brisk exercise to keep us from freezing. I could not even melt ice for water; and, at these temperatures, any resort to snow for the purpose of allaying thirst was followed by bloody lips and tongue; it burnt like caustic.

It was indispensable, then, that we should move on, looking out for traces as we went. Yet when the men were ordered to spread themselves, so as to multiply the chances, though they all obeyed heartily, some painful impress of solitary danger, or perhaps it may have been the varying configuration of the ice-field, kept them closing up continually into a single group. The strange manner in which some of us were affected I now attribute as much to shattered nerves as to the direct influence of the cold. Men like McGary and Bonsall, who had stood out our severest marches, were seized with trembling fits and short breath; and, in spite of all my efforts to keep up an example of sound bearing, I fainted twice on the snow.

We had been nearly eighteen hours out without water or food,

CHAPTER
XVI.

Search for
lost com-
panions.

Sufferings
from ex-
treme cold.

CHAPTER
XVI.Tracing a
sledge-
track.

when a new hope cheered us. I think it was Hans, our Esquimaux hunter, who thought he saw a broad sledge-track. The drift had nearly effaced it, and we were some of us doubtful at first whether it was not one of those accidental rifts which the gales make in the surface-snow. But, as we traced it on to the deep snow among the hummocks, we were led to footsteps; and, following these with religious care, we at last came in sight of a small American flag fluttering from a hummock, and lower down a little Masonic banner hanging from a tent-pole hardly above the drift. It was the camp of our disabled comrades; we reached it after an unbroken march of twenty-one hours.

A joyful
welcome.

The little tent was nearly covered. I was not among the first to come up; but, when I reached the tent-curtain, the men were standing in silent file on each side of it. With more kindness and delicacy of feeling than is often supposed to belong to sailors, but which is almost characteristic, they intimated their wish that I should go in alone. As I crawled in, and, coming upon the darkness, heard before me the burst of welcome gladness that came from the four poor fellows stretched on their backs, and then for the first time the cheer outside, my weakness and my gratitude together almost overcame me. "They had expected me: they were sure I would come!"

We were now fifteen souls; the thermometer 75° below the freezing point; and our sole accommodation a tent barely able to contain eight persons: more than half our party were obliged to keep from freezing by walking outside while the others slept. We could not halt long. Each of us took a turn of two hours' sleep; and we prepared for our homeward march.

Prepara-
tions for
return.

We took with us nothing but the tent, furs to protect the rescued party, and food for a journey of fifty hours. Everything else was abandoned. Two large buffalo-bags, each made of four skins, were doubled up, so as to form a sort of sack, lined on each side by fur, closed at the bottom, but opened at the top. This was laid on the sledge; the tent, smoothly folded, serving as a floor. The sick, with their limbs sewed up carefully in reindeer-skins, were placed upon the bed of buffalo-ropes, in a half-reclining posture; other skins and blanket-bags were thrown above them; and the whole litter was lashed together so as to allow but a single opening opposite the mouth for breathing.

This necessary work cost us a great deal of time and effort ; but it was essential to the lives of the sufferers. It took us no less than four hours to strip and refresh them, and then to embale them in the manner I have described. Few of us escaped without frost-bitten fingers : the thermometer was at $55^{\circ}.6$ below zero, and a slight wind added to the severity of the cold. CHAPTER
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It was completed at last, however ; all hands stood round, and, after repeating a short prayer, we set out on our retreat. It was fortunate indeed that we were not inexperienced in sledging over the ice. A great part of our track lay among a succession of hummocks, some of them extending in long lines, fifteen or twenty feet high, and so uniformly steep that we had to turn them by a considerable deviation from our direct course ; others that we forced our way through, far above our heads in height, lying in parallel ridges, with the space between too narrow for the sledge to be lowered into it safely, and yet not wide enough for the runners to cross without the aid of ropes to stay them. These spaces, too, were generally choked with light snow, hiding the openings between the ice-fragments. They were fearful traps to disengage a limb from, for every man knew that a fracture or a sprain even would cost him his life. Besides all this, the sledge was top-heavy with its load : the maimed men could not bear to be lashed down tight enough to secure them against falling off. Notwithstanding our caution in rejecting every superfluous burden, the weight, including bags and tent, was eleven hundred pounds. Difficulties and dangers.

And yet our march for the first six hours was very cheering. We made, by vigorous pulls and lifts, nearly a mile an hour, and reached the new floes before we were absolutely weary. Our sledge sustained the trial admirably. Ohlsen, restored by hope, walked steadily at the leading belt of the sledge lines ; and I began to feel certain of reaching our half-way station of the day before, where we had left our tent. But we were still nine miles from it, when, almost without premonition, we all became aware of an alarming failure of our energies. Exhaustion.

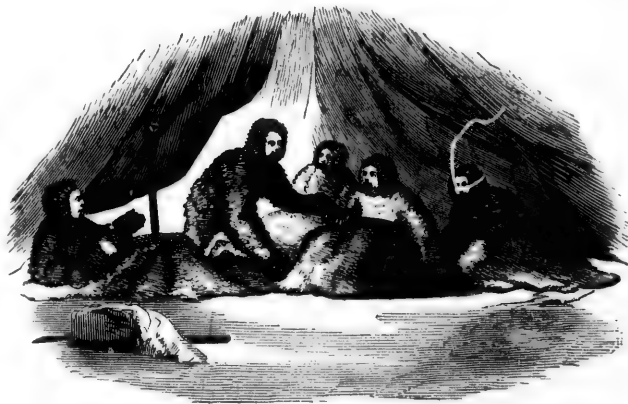
I was, of course, familiar with the benumbed and almost lethargic sensation of extreme cold ; and once, when exposed for some hours in the midwinter of Baffin's Bay, I had experienced symptoms which I compared to the diffused paralysis of the electro-galvanic

CHAPTER shock. But I had treated the *sleepy comfort* of freezing as something like the embellishment of romance. I had evidence now to the contrary.

Sleepiness
caused by
cold.

Bonsall and Morton, two of our stoutest men, came to me, begging permission to sleep: "they were not cold: the wind did not enter them now: a little sleep was all they wanted." Presently Hans was found nearly stiff under a drift; and Thomas, bolt upright, had his eyes closed, and could hardly articulate. At last John Blake threw himself on the snow, and refused to rise. They did not complain of feeling cold; but it was in vain that I wrestled, boxed, ran, argued, jeered, or reprimanded: an immediate halt could not be avoided.

We pitched our tent with much difficulty. Our hands were too powerless to strike a fire: we were obliged to do without water or food. Even the spirits (whisky) had frozen at the men's feet,



INSIDE OF TENT.

under all the coverings. We put Bonsall, Ohlsen, Thomas, and Hans, with the other sick men, well inside the tent, and crowded in as many others as we could. Then, leaving the party in charge of Mr. McGary, with orders to come on after four hours' rest, I pushed ahead with William Godfrey, who volunteered to be my companion. My aim was to reach the half-way tent, and thaw some ice and pemmican before the others arrived.

The floe was of level ice, and the walking excellent. I cannot tell how long it took us to make the nine miles, for we were in a strange sort of stupor, and had little apprehension of time. It was probably about four hours. We kept ourselves awake by imposing on each other a continued articulation of words; they must have been incoherent enough. I recall these hours as among the most wretched I have ever gone through: we were neither of us in our right senses, and retained a very confused recollection of what preceded our arrival at the tent. We both of us, however, remember a bear, who walked leisurely before us, and tore up as he went a jumper that Mr. McGary had improvidently thrown off the day before. He tore it into shreds and rolled it into a ball, but never offered to interfere with our progress. I remember this, and with it a confused sentiment that our tent and buffalo-robcs might probably share the same fate. Godfrey, with whom the memory of this day's work may atone for many faults of a later time, had a better eye than myself; and, looking some miles ahead, he could see that our tent was undergoing the same unceremonious treatment. I thought I saw it too, but we were so drunken with cold that we strode on steadily, and, for aught I know, without quickening our pace.

Probably our approach saved the contents of the tent; for when we reached it the tent was uninjured, though the bear had overturned it, tossing the buffalo-robcs and pemmican into the snow; we missed only a couple of blanket-bags. What we recollect, however, and perhaps all we recollect, is, that we had great difficulty in raising it. We crawled into our reindeer sleeping-bags without speaking, and for the next three hours slept on in a dreamy but intense slumber. When I awoke my long beard was a mass of ice, frozen fast to the buffalo-skin: Godfrey had to cut me out with his jack-knife. Four days after our escape I found my woollen comfortable with a goodly share of my beard still adhering to it.

We were able to melt water and get some soup cooked before the rest of our party arrived: it took them but five hours to walk the nine miles. They were doing well, and, considering the circumstances, in wonderful spirits. The day was almost providentially windless, with a clear sun. All enjoyed the refreshment we had got ready: the crippled were repacked in their robes; and

CHAPTER
XVI.A bear
appears.The tent
over-
turned.A sleep on
the ice.

CHAPTER XVI. **we sped briskly toward the hummock-ridges which lay between us and the Pinnacy Berg.**

"The hummocks we had now to meet came properly under the designation of squeezed ice. A great chain of bergs stretching from north-west to south-east, moving with the tides, had compressed the surface floes; and rearing them upon their edges, produced an area more like the volcanic pedragal of the basin of Mexico than anything else I can compare it to.

Desperate efforts.

It required desperate efforts to work our way over it—literally desperate, for our strength failed us anew, and we began to lose our self-control. We could not abstain any longer from eating snow; our mouths swelled, and some of us became speechless. Happily the day was warmed by a clear sunshine, and the thermometer rose to -4° in the shade; otherwise we must have frozen.

Sleeping on the snow.

Our halts multiplied, and we fell half-sleeping on the snow. I could not prevent it. Strange to say, it refreshed us. I ventured upon the experiment myself, making Riley wake me at the end of three minutes; and I felt so much benefited by it that I timed the men in the same way. They sat on the runners of the sledge, fell asleep instantly, and were forced to wakefulness when their three minutes were out.

By eight in the evening we emerged from the floes. The sight of the Pinnacy Berg revived us. Brandy, an invaluable resource in emergency, had already been served out in table-spoonful doses. We now took a longer rest, and a last but stouter dram, and reached the brig at 1 P.M., we believe without a halt.

Deliriousness from suffering.

I say *we believe*; and here perhaps is the most decided proof of our sufferings; we were quite delirious, and had ceased to entertain a sane apprehension of the circumstances about us. We moved on like men in a dream. Our footmarks seen afterward showed that we had steered a bee-line for the brig. It must have been by a sort of instinct, for it left no impress on the memory. Bonsall was sent staggering ahead, and reached the brig, God knows how, for he had fallen repeatedly at the track-lines; but he delivered with punctilious accuracy the messages I had sent by him to Dr. Hayes. I thought myself the soundest of all, for I went through all the formula of sanity, and can recall the muttering delirium of my comrades when we got back into the cabin of

our brig. Yet I have been told since of some speeches and some orders too of mine, which I should have remembered for their absurdity if my mind had retained its balance.

Petersen and Whipple came out to meet us about two miles from the brig. They brought my dog-team, with the restoratives I had sent for by Bonsall. I do not remember their coming. Dr. Hayes entered with judicious energy upon the treatment our condition called for, administering morphine freely, after the usual frictions. He reported none of our brain-symptoms as serious, referring them properly to the class of those indications of exhausted power which yield to generous diet and rest. Mr. Ohlsen suffered some time from strabismus and blindness; two others underwent amputation of parts of the foot, without unpleasant consequences; and two died in spite of all our efforts. This rescue party had been out for seventy-two hours. We had halted in all eight hours, half of our number sleeping at a time. We travelled between eighty and ninety miles, most of the way dragging a heavy sledge. The mean temperature of the whole time, including the warmest hours of three days, was at minus $41^{\circ}.2$. We had no water except at our two halts, and were at no time able to intermit vigorous exercise without freezing.

"April 4, Tuesday.—Four days have passed, and I am again at my record of failures, sound but aching still in every joint. The rescued men are not out of danger, but their gratitude is very touching. Pray God that they may live!"

Illness in
conse-
quence
of the
journey.



CHAPTER XVII.

BAKER'S DEATH—A VISIT—THE ESQUIMAUX—A NEGOTIATION—THEIR
EQUIPMENT—THEIR DEPARTMENT—A TREATY—THE FAREWELL—THE
SEQUEL—MYOUK—HIS ESCAPE—SCHUBERT'S ILLNESS.

CHAPTER
XVII.

THE week that followed has left me nothing to remember but anxieties and sorrow. Nearly all our party, as well the rescuers as the rescued, were tossing in their sick-bunks, some frozen, others undergoing amputations, several with dreadful premonitions of tetanus. I was myself among the first to be about; the necessities of the others claimed it of me.

Baker's
illness and
death.

Early in the morning of the 7th I was awakened by a sound from Baker's throat, one of those the most frightful and ominous that ever startle a physician's ear. The lock-jaw had seized him; that dark visitant whose foreshadowings were on so many of us. His symptoms marched rapidly to their result; he died on the 8th of April. We placed him the next day in his coffin, and, forming a rude, but heart-full procession, bore him over the broken ice and up the steep side of the ice-foot to Butler Island; then, passing along the snow-level to Fern-Rock, and, climbing the slope of the Observatory, we deposited his corpse upon the pedestals which had served to support our transit-instrument and theodolite. We read the service for the burial of the dead, sprinkling over him snow for dust, and repeated the Lord's Prayer; and then icing up again the opening in the walls we had made to admit the coffin, left him in his narrow house.

His fune-
ral.

Jefferson Baker was a man of kind heart and true principles. I knew him when we were both younger. I passed two happy seasons at a little cottage adjoining his father's farm. He thought it a privilege to join this expedition, as in those green summer days when I had allowed him to take a gun with me on some shooting-party. He relied on me with the affectionate confidence of boyhood, and I never gave him a harsh word or a hard thought.

We were watching in the morning at Baker's death-bed, when

one of our deck-watch, who had been cutting ice for the melter, came hurrying down into the cabin with the report, "People hollaing ashore!" I went up, followed by as many as could mount the gangway; and there they were, on all sides of our rocky harbour, dotting the snow-shores and emerging from the blackness of the cliffs,—wild and uncouth, but evidently human beings.

CHAPTER
XVII.
Arrival of
Esqui-
maux.

As we gathered on the deck they rose upon the more elevated fragments of the land-ice, standing singly and conspicuously like the figures in a tableau of the opera, and distributing themselves around almost in a half-circle. They were vociferating as if to attract our attention, or perhaps only to give vent to their sur-



MEETING THE ESQUIMAUX.

prise; but I could make nothing out of their cries, except "Hoah, ha, ha!" and "Ka, kääh! ka, kääh!" repeated over and over again.

There was light enough for me to see that they brandished no

CHAPTER
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weapons, and were only tossing their heads and arms about in violent gesticulations. A more unexcited inspection showed us, too, that their numbers were not as great nor their size as Patagonian as some of us had been disposed to fancy at first. In a word, I was satisfied that they were natives of the country; and, calling Petersen from his bunk to be my interpreter, I proceeded, unarmed, and waving my open hands, toward a stout figure who made himself conspicuous and seemed to have a greater number near him than the rest. He evidently understood the movement, for he at once, like a brave fellow, leaped down upon the floe and advanced to meet me fully half way.

Dress of
the Esqui-
maux.

He was nearly a head taller than myself, extremely powerful and well-built, with swarthy complexion and piercing black eyes. His dress was a hooded *capôte* or jumper of mixed white and blue fox-pelts, arranged with something of fancy, and booted trousers of white bear-skin, which at the end of the foot were made to terminate with the claws of the animal.

A negotia-
tion.

I soon came to an understanding with this gallant diplomatist. Almost as soon as we commenced our parley, his companions, probably receiving signals from him, flocked in and surrounded us; but we had no difficulty in making them know positively that they must remain where they were, while Metek went with me on board the ship. This gave me the advantage of negotiating, with an important hostage.

Fearless-
ness of the
Esqui-
maux.

Although this was the first time he had ever seen a white man, he went with me fearlessly; his companions staying behind on the ice. Hickey took them out what he esteemed our greatest delicacies,—slices of good wheat bread, and corned pork, with exorbitant lumps of white sugar; but they refused to touch them. They had evidently no apprehension of open violence from us. I found afterward that several among them were singly a match for the white bear and the walrus, and that they thought us a very pale-faced crew.

Being satisfied with my interview in the cabin, I sent out word that the rest might be admitted to the ship; and, although they, of course, could not know how their chief had been dealt with, some nine or ten of them followed with boisterous readiness upon the bidding. Others in the mean time, as if disposed to give us their company for the full time of a visit, brought up from behind

the land-ice as many as fifty-six fine dogs, with their sledges, and secured them within two hundred feet of the brig, driving their lances into the ice, and picketing the dogs to them by the seal-skin traces. The animals understood the operation perfectly, and lay down as soon as it commenced. The sledges were made up of small fragments of porous bone, admirably knit together by thongs of hide; the runners, which glistened like burnished steel, were of highly-polished ivory, obtained from the tusks of the walrus.

The only arms they carried were knives, concealed in their boots; but their lances, which were lashed to the sledges, were quite a formidable weapon. The staff was of the horn of the narwhal, or else of the thigh-bones of the bear, two lashed together, or sometimes the mirabilis of the walrus, three or four of them united. This last was a favourite material also for the cross-bars of their sledges. They had no wood. A single rusty hoop from a current-drifted cask might have furnished all the knives of the party; but the fleam-shaped tips of their lances were of unmistakable steel, and were rivetted to the tapering bony point with no mean skill. I learned afterward that the metal was obtained in traffic from the more southern tribes.

They were clad much as I have described Metek, in boots, and white bear-skin breeches, with their feet decorated like his, *en griffe*. A strip of knotted leather worn round the neck, very greasy and dirty-looking, which no one could be persuaded to part with for an instant, was mistaken at first for an ornament by the crew: it was not until mutual hardships had made us better acquainted that we learned its mysterious uses.

When they were first allowed to come on board, they were very rude and difficult to manage. They spoke three or four at a time, to each other and to us, laughing heartily at our ignorance in not understanding them, and then talking away as before. They were incessantly in motion, going everywhere, trying doors, and squeezing themselves through dark passages, round casks and boxes, and out into the light again, anxious to touch and handle everything they saw, and asking for, or else endeavouring to steal, everything they touched. It was the more difficult to restrain them, as I did not wish them to suppose that we were at all intimidated. But there were some signs of our disabled con-

CHAPTER
XVII.

Sledges

Arms.

Dress.

Behaviour

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dition which it was important they should not see; it was especially necessary to keep them out of the fore-castle, where the dead body of poor Baker was lying; and, as it was in vain to reason or persuade, we had at last to employ the "gentle laying-on of hands," which, I believe, the laws of all countries tolerate, to keep them in order.

Our whole force was mustered and kept constantly on the alert; but though there may have been something of discourtesy in the occasional shoulderings and hustlings that enforced the police of the ship, things went on good-humouredly. Our guests continued running in and out and about the vessel, bringing in provisions, and carrying them out again to their dogs on the ice,—in fact, stealing all the time, until the afternoon; when, like tired children, they threw themselves down to sleep. I ordered them to be made comfortable in the hold; and Morton spread a large buffalo-robe for them, not far from a coal-fire in the galley-stove.

Esqui-
maux
cooking
and eat-
ing.

They were lost in barbarous amaze at the new fuel,—too hard for blubber, too soft for firestone,—but they were content to believe it might cook as well as seals' fat. They borrowed from us an iron pot and some melted water, and parboiled a couple of pieces of walrus-meat; but the real *pièce de resistance*, some five pounds a head, they preferred to eat raw. Yet there was something of the *gourmet* in their mode of assorting their mouthfuls of beef and blubber. Slices of each, or rather strips, passed between the lips, either together or in strict alternation, and with a regularity of sequence that kept the molars well to their work.

They did not eat all at once, but each man when and as often as the impulse prompted. Each slept after eating, his raw chunk lying beside him on the buffalo skin; and as he woke, the first act was to eat, and the next to sleep again. They did not lie down, but slumbered away in a sitting-posture, with the head declined upon the breast, some of them snoring famously.

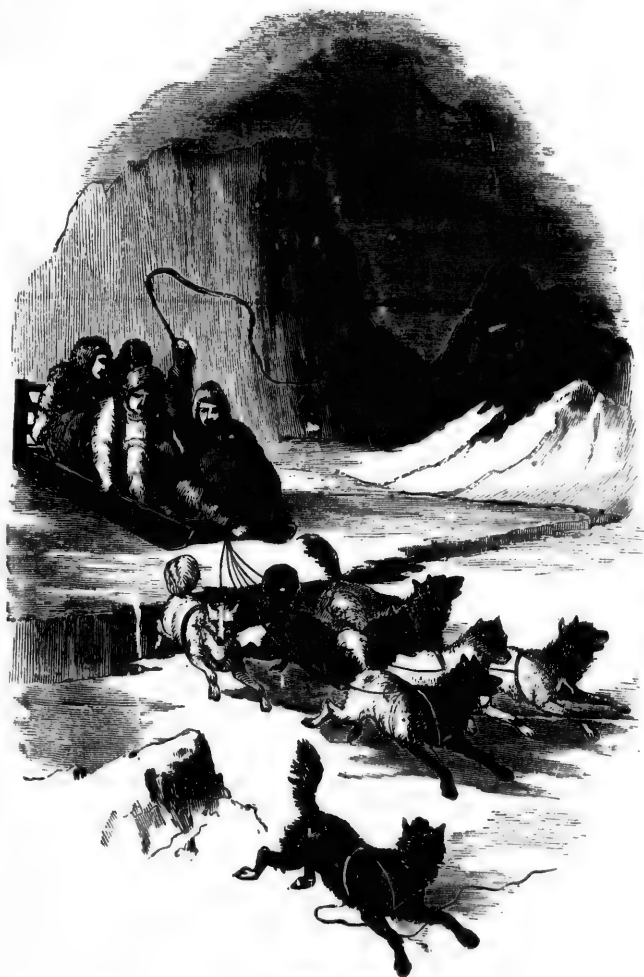
A treaty.

In the morning they were anxious to go; but I had given orders to detain them for a parting interview with myself. It resulted in a treaty, brief in its terms, that it might be certainly remembered, and mutually beneficial, that it might possibly be kept. I tried to make them understand what a powerful Prospero they had had for a host, and how beneficent he would prove him-

self so long as they did his bidding. And, as an earnest of my
favour, I bought all the walrus-meat they had to spare, and four

CHAPTER
XVII.

Purchasea



WILD DOG TEAM.

of their dogs, enriching them in return with needles and beads,
and a treasure of old cask staves.

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In the fulness of their gratitude, they pledged themselves emphatically to return in a few days with more meat, and to allow me to use their dogs and sledges for my excursions to the north. I then gave them leave to go. They yoked in their dogs in less than two minutes, got on their sledges, cracked their two-fathom-and-a-half-long seal-skin whips, and were off down the ice to the south-west at a rate of seven knots an hour.

Visit from
a second
party.

They did not return. I had read enough of treaty-makings not to expect them too confidently. But the next day came a party of five, on foot—two old men, one of middle age, and a couple of gawky boys. We had missed a number of articles soon after the first party left us, an axe, a saw, and some knives. We found afterward that our storehouse at Butler Island had been entered; we were too short-handed to guard it by a special watch. Besides all this, reconnoitring stealthily beyond Sylvia Head, we discovered a train of sledges drawn up behind the hummocks.

There was cause for apprehension in all this; but I felt that I could not afford to break with the rogues. They had it in their power to molest us seriously in our sledge-travel; they could make our hunts around the harbour dangerous; and my best chance of obtaining an abundant supply of fresh meat, our great desideratum, was by their agency. I treated the new party with marked kindness, and gave them many presents; but took care to make them aware that, until all the missing articles were restored, no member of the tribe would be admitted again as a guest on board the brig. They went off with many pantomimic protestations of innocence; but M'Gary, nevertheless, caught the incorrigible scamps stealing a coal-barrel as they passed Butler Island, and expedited their journey homeward by firing among them a charge of small shot.

Thievish
propensities.

Still, one peculiar worthy—we thought it must have been the venerable of the party, whom I knew afterwards as a stanch friend, old Shang-huh—managed to work round in a westerly direction, and to cut to pieces my India-rubber boat, which had been left on the floe since Mr. Brooks's disaster, and to carry off every particle of the wood.

A few days after this, an agile, elfin youth drove up to our floe in open day. He was sprightly and good-looking, and had quite a neat turn-out of sledge and dogs. He told his name with

frankness, "*Myouk*, I am,"—and where he lived. We asked him about the boat; but he denied all knowledge of it, and refused either to confess or repent. He was surprised when I ordered him to be confined to the hold. At first he refused to eat, and sat down in the deepest grief; but after a while he began to sing, and then to talk and cry, and then to sing again; and so he kept on rehearsing his limited *solfeggio*,—

CHAPTER
XVII

Myouk's
song in
prison.



and crying and talking by turns, till a late hour of the night. When I turned in, he was still noisily disconsolate.

There was a simplicity and *bonhomie* about this boy that interested me much; and I confess that when I made my appearance next morning—I could hardly conceal it from the gentleman on duty, whom I affected to censure—I was glad my bird had flown. Some time during the morning-watch he had succeeded in throwing off the hatch and escaping. We suspected that he had confederates ashore, for his dogs had escaped with as much address as himself. I was convinced, however, that I had the truth from him, where he lived, and how many lived with him—my cross-examination on these points having been very complete and satisfactory.

His escape

It was a sad business for some time after these Esquimaux left us, to go on making and registering our observations at Fern Rock. Baker's corpse still lay in the vestibule, and it was not long before another was placed by the side of it. We had to pass the bodies as often as we went in or out; but the men, grown feeble and nervous, disliked going near them in the night-time. When the summer thaw came, and we could gather stones enough, we built up a grave on a depression of the rocks, and raised a substantial cairn above it.

"April 19, *Wednesday*.—I have been out on the floe again, breaking in my dogs. My re-inforcement from the Esquimaux makes a noble team for me. For the last five days I have been striving with them, just as often and as long as my strength allowed me; and to-day I have my victory. The Society for Preventing Cruelty to Animals would have put me in custody if they had been near enough; but, thanks to a merciless whip freely

Breaking
the dogs.

CHAPTER
XVII.
administered, I have been dashing along twelve miles in the last hour, and am back again ; harness, sledge, and bones all unbroken. I am ready for another journey.

"*April 22, Saturday.*—Schubert has increasing symptoms of erysipelas around his amputated stump ; and every one on board is depressed and silent except himself. He is singing in his bunk, as joyously as ever, 'Aux gens atrabilaires,' &c. Poor fellow ! I am alarmed about him : it is a hard duty which compels me to take the field, while my presence might cheer his last moments."



CHAPTER XVIII.

AN EXPLORATION—EQUIPMENT—OUTFIT—DEPARTURE—RESULTS—FEATURES OF COAST—ARCHITECTURAL ROCKS—THREE BROTHER TURRETS—TENNYSON'S MONUMENT—THE GREAT GLACIER OF HUMBOLDT.

THE month of April was about to close, and the short season available for Arctic search was upon us. The condition of things on board the brig was not such as I could have wished for; but there was nothing to exact my presence, and it seemed to me clear that the time had come for pressing on the work of the expedition. The arrangements for our renewed exploration had not been intermitted, and were soon complete. I leave to my journal its own story.

CHAPTER
XVIII.

Prepara-
tions

"*April 25, Tuesday.*—A journey on the carpet; and the crew busy with the little details of their outfit: the officers the same.

"I have made a log-line for sledge-travel, with a contrivance for fastening it to the ice, and liberating it at pleasure. It will give me my dead reckoning quite as well as on the water. I have a team now of seven dogs—four that I bought of the Esquimaux, and three of my old stock. They go together quite respectably. Godfrey and myself will go with them on foot, following the first sledge on Thursday.

"*April 26, Wednesday.*—M'Gary went yesterday with the leading sledge; and, as Brooks is still on his back in consequence of the amputation, I leave Ohlsen in charge of the brig. He has my instructions in full; among them I have dwelt largely upon the treatment of the natives.

"These Esquimaux must be watched carefully, at the same time they are to be dealt with kindly, though with a strict enforcement of our police regulations, and some caution as to the freedom with which they may come on board. No punishments must be permitted, either of them or in their presence, and no resort to fire-arms unless to repel a serious attack. I have given orders, however, that if the contingency does occur, there shall be no firing over head. The *prestige* of the gun with a savage is in

Rules for
treatment
of the
natives.

CHAPTER
XVIII.

his notion of its infallibility. You may spare bloodshed by killing a dog, or even wounding him ; but in no event should you throw away your ball. It is neither politic nor humane.

"Our stowage precautions are all arranged, to meet the chance of the ice breaking up while I am away ; and a boat is placed ashore with stores, as the brig may be forced from her moorings.

Force left
in the
brig.

"The worst thought I have now in setting out is, that of the entire crew I can leave but two behind in able condition, and the doctor and Bonsall are the only two officers who can help Ohlsen. This is our force, four able-bodied, and six disabled, to keep the brig ; the commander and seven men, scarcely better upon the average, out upon the ice. Eighteen souls, thank God ! certainly not eighteen bodies !

"I am going this time to follow the ice-belt (Eis-fod) to the Great Glacier of Humboldt, and there load up with pemmican from our cache of last October. From this point I expect to stretch along the face of the glacier inclining to the west of north, and make an attempt to cross the ice to the American side. Once on smooth ice, near this shore, I may pass to the west, and enter the large indentation whose existence I can infer with nearly positive certainty. In this I may find an outlet, and determine the state of things beyond the ice-clogged area of this bay.

Equipment
of explor-
ing party.

"I take with me pemmican, and bread, and tea, a canvas tent, five feet by six, and two sleeping-bags of reindeer-skin. The sledge has been built on board by Mr. Ohlsen. It is very light, of hickory, and but nine feet long. Our kitchen is a soup-kettle for melting snow and making tea, arranged so as to boil with either lard or spirits."

The pattern of the tent was suggested by our experience during the fall journeys. The greatest discomfort of the Arctic traveller when camping out is from the congealed moisture of the breath forming long feathers of frost against the low shelving roof of the tent within a few inches of his face. The remedy which I adopted was to run the tent-poles through grummet-holes in the canvas about eighteen inches above the floor, and allow the lower part of the sides to hang down vertically like a valance, before forming the floor-cloth. This arrangement gave ample room for breathing ; it prevented the ice forming above the sleeper's head, and the melted rime from trickling down upon it.

"For instruments, I have a fine Gambey sextant, in addition to my ordinary pocket-instrument, an artificial horizon, and a Barrow's dip-circle. These occupy little room upon the sledge. My telescope and chronometer I carry on my person.

CHAPTER
XVIII.
Equip-
ment and
stores.

"McGary has taken the *Faith*. He carries few stores, intending to replenish at the cache of Bonsall Point, and to lay in pemmican at McGary Island. Most of his cargo consists of bread, which we find it hard to dispense with in eating cooked food. It has a good effect in absorbing the fat of the pemmican, which is apt to disagree with the stomach."



THE FAITH.

Godfrey and myself followed on the 27th, as I had intended. The journey was an arduous one to be undertaken, even under the most favouring circumstances, and by unbroken men. It was to be the crowning expedition of the campaign, to attain the Ultima Thule of the Greenland shore, measure the waste that lay between it and the unknown West, and seek round the furthest circle of the ice for an outlet to the mysterious channels beyond. The scheme could not be carried out in its details; yet it was prosecuted far enough to indicate what must be our future fields of labour, and to determine many points of geographical interest. Our observations were in general confirmatory of those which had

The
crowning
expedi-
tion.

CHAPTER
XVIII.The out-
line of the
coast.

been made by Mr. Bonsall ; and they accorded so well with our subsequent surveys as to trace for us the outline of the coast with great certainty.

If the reader has had the patience to follow the pathway of our little brig, he has perceived that at Refuge Harbour, our first asylum, a marked change takes place in the line of direction of the coast. From Cape Alexander, which may be regarded as the westernmost cape of Greenland, the shore runs nearly north and south, like the broad channel of which it is the boundary ; but on reaching Refuge Inlet it bends nearly at a right angle, and follows on from west to east till it has passed the 65th degree of longitude. Between Cape Alexander and the inlet it is broken by two indentations, the first of them near the Etah settlement, which was visited in 1855 by the Rescue Expedition under Lieutenant Hartstene, and which bears on my charts the name of that noble-spirited commander ; the other remembered by us as Lifeboat Cove. In both of these the glaciers descend to the water-line, from an interior of lofty, rock-clad hills.³⁵

Head-
lands.

The coast-line is diversified, however, by numerous water-worn headlands,³⁶ which, on reaching Cape Hatherton, decline into rolling hills,³⁷ their margins studded with islands, which are the favourite breeding-places of the eider, the glaucous gull, and the tern. Cape Hatherton rises boldly above these, a mass of porphyritic rock.³⁸

After leaving Refuge Harbour, the features of the coast undergo a change. There are no deep bays or discharging glaciers ; and it is only as we approach Rensselaer Harbour, where the shore-line begins to incline once more to the north, that the deep recesses and ice-lined fiords make their appearance again.

Geological
structure.

The geological structure changes also,³⁹ and the cliffs begin to assume a series of varied and picturesque outlines along the coast, that scarcely require the aid of imagination to trace in them the ruins of architectural structure. They come down boldly to the shore-line, their summits rising sometimes more than a thousand feet above the eye, and the long cones of rubbish at their base mingling themselves with the ice-foot.⁴⁰

The coast retains the same character as far as the Great Glacier. It is indented by four great bays, all of them communicating with deep gorges, which are watered by streams from the

interior ice-fields; yet none of them exhibit glaciers of any magnitude at the water-line. Dallas Bay shows a similar formation, and the archipelago beyond Cape Hunter retains it almost without change.⁴¹

The mean height of the table-land, till it reaches the bed of the Great Glacier, may be stated, in round numbers, at 900 feet, its tallest summit near the water at 1300 and the rise of the background above the general level at 600 more.⁴² The face of this stupendous ice-mass, as it defined the coast, was everywhere an abrupt and threatening precipice, only broken by clefts and deep ravines, giving breadth and interest to its wild expression.

The most picturesque portion of the North Greenland coast is to be found after leaving Cape George Russell and approaching



THREE BROTHER TURRETS.

Dallas Bay. The red sandstones contrast most favourably with the blank whiteness, associating the cold tints of the dreary Arctic landscape with the warm colouring of more southern lands. The seasons have acted on the different layers of the cliff so as to give

Contrast of
colours.

CHAPTER
XVIII.Three
Brother
Turrets.

them the appearance of jointed masonry, and the narrow line of greenstone at the top caps them with well-simulated battlements.

One of these interesting freaks of nature became known to us as the "Three Brother Turrets."

The sloping rubbish at the foot of the coast-wall led up, like an artificial causeway, to a gorge that was streaming at noon-day with the southern sun, while everywhere else the rock stood out in the blackest shadow. Just at the edge of this bright opening rose the dreamy semblance of a castle, flanked with triple towers, completely isolated and defined. These were the "Three Brother Turrets."

I was still more struck with another of the same sort, in the immediate neighbourhood of my halting-ground beyond Sunny Gorge, to the north of latitude 79°. A single cliff of greenstone, marked by the slaty limestone that once encased it, rears itself from a crumbled base of sandstones, like the boldly chiselled rampart of an ancient city. At its northern extremity, on the brink of a deep ravine which has worn its way among the ruins, there stands a solitary column, or minaret-tower, as sharply finished as if it had been cast for the Place Vendôme. Yet the length of the shaft alone is 480 feet, and it rises on a plinth or pedestal itself 280 feet high.

A natural
minaret
tower.

I remember well the emotions of my party as it first broke upon our view. Cold and sick as I was, I brought back a sketch of it, which may have interest for the reader, though it scarcely suggests the imposing dignity of this magnificent landmark. Those who are happily familiar with the writings of Tennyson, and have communed with his spirit in the solitudes of a wilderness, will apprehend the impulse that inscribed the scene with his name.

The archi-
pelago.

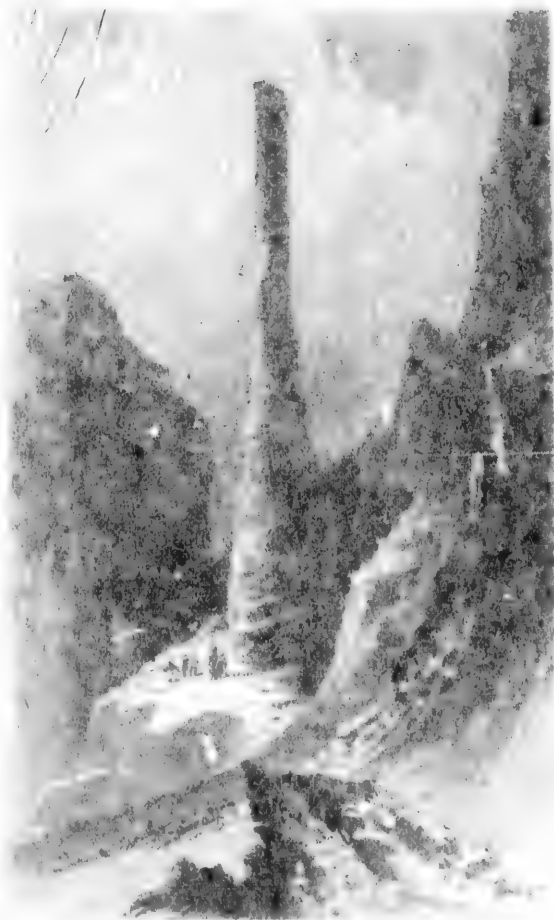
Still beyond this comes the archipelago which bears the name of our brig, studded with the names of those on board of her who adhered to all the fortunes of the expedition; and at its eastern cape spreads out the Great Glacier of Humboldt. My recollections of this glacier are very distinct. The day was beautifully clear on which I first saw it, and I have a number of sketches made as we drove along in view of its magnificent face. They disappoint me, giving too much white surface and badly-fading distances, the grandeur of the few bold and simple lines of nature being almost entirely lost.

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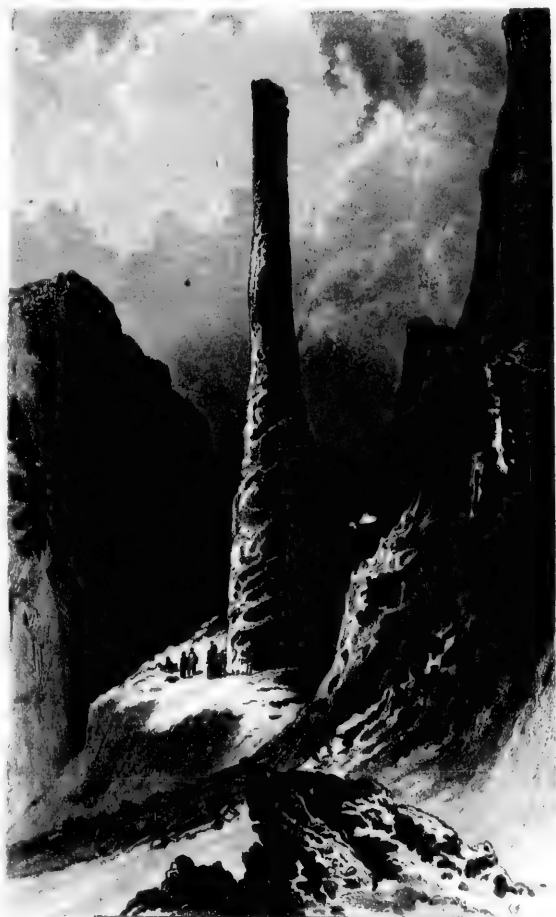
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TEHRAN, PERSIA



TENNYSON'S MONUMENT.

From a sketch by J. H. Stoddard.

1860.

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I will not attempt to do better by florid description. Men only rhapsodize about Niagara and the ocean. My notes speak simply of the "long, ever-shining line of cliff diminished to a well-pointed wedge in the perspective;" and again, of "the face of glistening ice, sweeping in a long curve from the low interior, the facets in front intensely illuminated by the sun." But this line of cliff rose in solid glassy wall 300 feet above the water-level, with an unknown, unfathomable depth below it; and its curved face, 60 miles in length from Cape Agassiz to Cape Forbes, vanished into unknown space at not more than a single day's railroad-travel from the Pole. The interior with which it communicated, and from which it issued, was an unsurveyed *mer de glace*, an ice-ocean, to the eye of boundless dimensions.⁴³

CHAPTER
XVIII.Description
of the
Great
Glacier.

It was in full sight—the mighty crystal bridge which connects the two continents of America and Greenland. I say continents; for Greenland, however insulated it may ultimately prove to be, is in mass strictly continental. Its least possible axis, measured from Cape Farewell to the line of this glacier, in the neighbourhood of the 80th parallel gives a length of more than 1200 miles, not materially less than that of Australia, from its northern to its southern cape.⁴⁴

Its axis.

Imagine, now, the centre of such a continent, occupied through nearly its whole extent by a deep, unbroken sea of ice, that gathers perennial increase from the water-shed of vast snow-covered mountains and all the precipitations of the atmosphere upon its own surface. Imagine this, moving onward like a great glacial river, seeking outlets at every fiord and valley, rolling icy cataracts into the Atlantic and Greenland seas; and, having at last reached the northern limit of the land that has borne it up, pouring out a mighty frozen torrent into unknown Arctic space.⁴⁵

Its motion

It is thus, and only thus, that we must form a just conception of a phenomenon like this Great Glacier. I had looked in my own mind for such an appearance, should I ever be fortunate enough to reach the northern coast of Greenland. But now that it was before me, I could hardly realize it. I had recognised, in my quiet library at home, the beautiful analogies which Forbes and Studer have developed between the glacier and the river; but I could not comprehend at first this complete substitution of ice for water.

It was slowly that the conviction dawned on me that I was

CHAPTER
XVIII.

The
counter-
part of the
great
river sys-
tem.

looking upon the counterpart of the great river-system of Arctic Asia and America. Yet here were no water-feeders from the south. Every particle of moisture had its origin within the Polar circle, and had been converted into ice. There were no vast alluvions, no forest or animal traces borne down by liquid torrents. Here was a plastic, moving, semi-solid mass, obliterating life, swallowing rocks and islands, and ploughing its way with irresistible march through the crust of an investing sea.



CHAPTER. XIX.

PROGRESS OF THE PARTY—PROSTRATION—DALLAS BAY—DEATH OF SCHUBERT—THE BRIG IN MAY—PROGRESS OF SPRING—M'GARY'S RETURN—DR. HAYES'S PARTY—EQUIPMENT—SCHUBERT'S FUNERAL.

"It is now the 20th of May, and for the first time, I am able, propped up by pillows and surrounded by sick messmates, to note the fact that we have failed again to force the passage to the north.

CHAPTER
XIX.

"Godfrey and myself overtook the advance party under M'Gary two days after leaving the brig. Our dogs were in fair travelling condition, and, except snow-blindness, there seemed to be no drawback to our efficiency. In crossing Marshall Bay we found the snow so accumulated in drifts that, with all our efforts to pick out a track, we became involved; we could not force our sledges through. We were forced to unload, and carry forward the cargo on our backs, beating a path for the dogs to follow in. In this way we plodded on to the opposite headland, Cape William Wood, where the waters of Mary Minturn River, which had delayed the freezing of the ice, gave us a long reach of level travel. We then made a better rate; and our days' marches were such as to carry us by the 4th of May nearly to the glacier.

Involved
in snow.

"This progress, however, was dearly earned. As early as the 3d of May the winter's scurvy reappeared painfully among our party. As we struggled through the snow along the Greenland coast we sank up to our middle; and the dogs, floundering about, were so buried as to preclude any attempts at hauling. This excessive snow-deposit seemed to be due to the precipitation of cold condensing wind suddenly wafted from the neighbouring glacier; for at Rensselaer Harbour we had only four inches of general snow depth. It obliged us to unload our sledges again, and carry their cargo,—a labour which resulted in dropsical swellings, with painful prostration. Here three of the party were taken with snow-blindness, and George Stephenson had to be condemned as unfit for travel altogether, on account of chest-symptoms accom-

Reappear-
ance of
disease

CHAPTER
XIX.The caches
robbed by
the bears.Illness
from fa-
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tion.

panying his scorbutic troubles. On the 4th Thomas Hickey also gave in, although not quite disabled for labour at the track-lines.

"Perhaps we would still have got on; but, to crown all, we found that the bears had effected an entrance into our pemmican casks, and destroyed our chances of reinforcing our provisions at the several caches. This great calamity was certainly inevitable; for it is simple justice to the officers under whose charge the provision depôts were constructed, to say that no means in their power could have prevented the result. The pemmican was covered with blocks of stone which it had required the labour of three men to adjust; but the extraordinary strength of the bear had enabled him to force aside the heaviest rocks, and his pawing had broken the iron casks which held our pemmican literally into chips. Our alcohol cask, which it had cost me a separate and special journey in the late fall to deposit, was so completely destroyed that we could not find a stave of it.

"Off Cape James Kent, about eight miles from 'Sunny Gorge,' while taking an observation for latitude, I was myself seized with a sudden pain, and fainted. My limbs became rigid, and certain obscure tetanoid symptoms of our late winter's enemy disclosed themselves. In this condition I was unable to make more than nine miles a-day. I was strapped upon the sledge, and the march continued as usual; but my powers diminished so rapidly that I could not resist even the otherwise comfortable temperament of 5° below zero. My left foot becoming frozen up to the metatarsal joint, caused a vexatious delay; and the same night it became evident that the immovability of my limbs was due to dropsical effusion.

"On the 5th, becoming delirious, and fainting every time that I was taken from the tent to the sledge, I succumbed entirely. I append the report of our surgeon, made upon my return. This will best exhibit the diseased condition of myself and party, and explain, in stronger terms than I can allow myself to use, the extent of my efforts to contend against it.⁴⁶

"My comrades would kindly persuade me that, even had I continued sound, we could not have proceeded on our journey. The snows were very heavy, and increasing as we went; some of the drifts perfectly impassable, and the level floes often four feet deep in yielding snow. The scurvy had already broken out among the men, with symptoms like my own; and Morton, our strongest

man, was beginning to give way. It is the reverse of comfort to me that they shared my weakness. All that I should remember with pleasurable feeling is, that to five brave men, Morton, Riley, Hickey, Stephenson, and Hans, themselves scarcely able to travel, I owe my preservation. They carried me back by forced marches, after cacheing our stores and India-rubber boat near Dallas Bay, in lat. $79^{\circ}.5$, lon. 66° .



APPROACHING DALLAS BAY.

"I was taken into the brig on the 14th. Since then, fluctuating between life and death, I have by the blessing of God reached the present date, and see feebly in prospect my recovery. Dr. Hayes regards my attack as one of scurvy, complicated by typhoid fever. George Stephenson is similarly affected. Our worst symptoms are dropsical effusion and night-sweats.

"*May 22, Monday.*—Let me, if I can, make up my record for the time I have been away or on my back.

"Poor Schubert is gone. Our gallant, merry-hearted companion left us some ten days ago, for, I trust, a more genial world. It is sad, in this dreary little homestead of ours, to miss his contented face and the joyous troll of his ballads.

"The health of the rest has, if anything, improved. Their complexions show the influence of sunlight, and I think several

Prospect of recovery.

Death of Schubert.

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have a firmer and more elastic step. Stephenson and Thomas are the only two beside myself who are likely to suffer permanently from the effects of our break-down. Bad scurvy both: symptoms still serious.

Arrange-
ments on
board the
brig.

"Before setting out, a month ago, on a journey that should have extended into the middle of June, I had broken up the establishment of Butler Island, and placed all the stores around the brig, upon the heavy ice. My object in this was a double one. First, to remove from the Esquimaux the temptation and ability to pilfer. Second, to deposit our cargo where it could be re-stowed by very few men, if any unforeseen change in the ice made it necessary. Mr. Ohlsen, to whose charge the brig was committed, had orders to stow the hold slowly, remove the forward housing, and fit up the forecastle for the men to inhabit it again.

All these he carried out with judgment and energy. I find, upon my return, the brig so stowed and refitted that four days would prepare us for sea. The quarter-deck alone is now boarded in; and here all the officers and sick are sojourning. The wind makes this wooden shanty a somewhat airy retreat; but, for the health of our maimed, scorbutic men, it is infinitely preferable to the less-ventilated quarters below. Some of the crew, with one stove, are still in the forecastle, but the old cabin is deserted.

Hans the
hunter.

"I left Hans as hunter. I gave him a regular exemption from all other labour, and a promised present to his lady-love on reaching Fiskernaes. He signalized his promotion by shooting two deer, *Tukukuk*, the first yet shot. We have now on hand one hundred and forty-five pounds of venison, a very gift of grace to our diseased crew. But, indeed, we are not likely to want for wholesome food, now that the night is gone, which made our need of it so pressing. On the first of May those charming little migrants the snow-birds, *ultima coelicolum*, which only left us on the 4th of November, returned to our ice-crusted rocks, whence they seem to 'fill the sea and air with their sweet jargoning.' Seal literally abound, too. I have learned to prefer this flesh to the reindeer's, at least that of the female seal, which has not the feter of her mate's.

"By the 12th, the sides of the *Advance* were free from snow, and her rigging clean and dry. The floe is rapidly undergoing its wonderful processes of decay, and the level ice measures but six feet in thickness. To-day they report a burgomaster gull

seen, one of the earliest but surest indications of returning open water. It is not strange, ice-leaguered exiles as we are, that we observe and exult in these things. They are the pledges of renewed life, the olive-branch of this dreary waste : we feel the spring in all our pulses.

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"The first thing I did after my return was to send M'Gary to the Life-boat Cove, to see that our boat and its buried provisions were secure. He made the journey by dog-sledge in four days, and has returned reporting that all is safe : an important help for us, should this heavy ice of our more northern prison refuse to release us.

M'Gary's
expedi-
tion.

"But the pleasantest feature of his journey was the disclosure of open water, extending up in a sort of tongue, with a trend of north by east to within two miles of Refuge Harbour, and there widening as it expanded to the south and west.

Discovery
of open
water.

"Indeed, some circumstances which he reports seem to point to the existence of a north water all the year round ; and the frequent water-skies, fogs, &c., that we have seen to the south-west during the winter, go to confirm the fact. The breaking up of the Smith Strait's ice commences much earlier than this ; but as yet it has not extended further than Littleton Island, where I should have wintered if my fall journey had not pointed to the policy of remaining here. The open water undoubtedly has been the cause of the retreat of the Esquimaux. Their sledge-tracks have been seen all along the land-foot ; but, except a snow-house at Esquimaux Point, we have met nothing which to the uninitiated traveller would indicate that they had rested upon this desert coast.

"As soon as I had recovered enough to be aware of my failure, I began to devise means for remedying it. But I found the resources of the party shattered. Pierre had died but a week before, and his death exerted an unfavourable influence. There were only three men able to do duty. Of the officers, Wilson, Brooks, Sontag, and Petersen, were knocked up. There was no one except Sontag, Hayes, or myself who was qualified to conduct a survey ; and, of us three, Dr. Hayes was the only one on his feet.

Disease
among
the men

"The quarter to which our remaining observations were to be directed lay to the north and east of the Cape Sabine of Captain Inglefield. The interruption our progress along the coast of Greenland had met from the Great Glacier, and the destruction of our provision-caches by the bears, left a blank for us of the entire

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XIX.Object of
the expedi-
tion.

northern coast-line. It was necessary to ascertain whether the furthestmost expansion of Smith's Strait did not find an outlet in still more remote channels; and this became our duty the more plainly, since our theodolite had shown us that the northern coast trended off to the eastward, and not toward the west, as our predecessor had supposed. The angular difference of 60° between its bearings on his charts and our own left me completely in the dark as to what might be the condition of this unknown area.

"I determined to trust almost entirely to the dogs for our travel in the future, and to send our parties of exploration, one after the other, as rapidly as the strength and refreshing of our team would permit.

"Dr. Hayes was selected for that purpose; and I satisfied myself that, with a little assistance from my comrades, I could be carried round to the cots of the sick, and so avail myself of his services in the field.

Dr.
Hayes's
route.

"He was a perfectly fresh man, not having yet undertaken a journey. I gave him a team and my best driver, William Godfrey. He is to cross Smith's Straits above the inlet, and make as near as may be a straight course for Cape Sabine. My opinion is, that by keeping well south he will find the ice less clogged and easier sledging. Our experience proves, I think, that the transit of this broken area must be most impeded as we approach the glacier. The immense discharge of icebergs cannot fail to break it up seriously for travel.

Equip-
ment.

"I gave him the small sledge which was built by Mr. Ohlsen. The snow was sufficiently thawed to make it almost unnecessary to use fire as a means of obtaining water: they could therefore dispense with tallow or alcohol, and were able to carry pemmican in larger quantities. Their sleeping-bags were a very neat article of a light reindeer-skin. The dogs were in excellent condition too, no longer foot-sore, but well rested and completely broken, including the four from the Esquimaux, animals of great power and size. Two of these, the stylish leaders of the team, a span of thoroughly wolfish iron-grays, have the most powerful and wild-beast-like bound that I have seen in animals of their kind.

"I made up the orders of the party on the 19th, the first day that I was able to mature a plan; and with commendable zeal they left the brig on the 20th.

"May 23, Tuesday.—They have had superb weather, thank Heaven!—a profusion of the most genial sunshine, bringing out the seals in crowds to bask around their breathing-holes. A ptarmigan was killed to-day, a male, with but two brown feathers on the back of his little neck to indicate the return of his summer plumage.

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—
Seals
appear.

"The winter is gone! The Andromeda has been found on shore under the snow, with tops vegetating and green! I have a shoot of it in my hand.

Vegeta-
tion.

"May 25, Thursday.—Bands of soft mist hide the tops of the hills: the unbroken transparency of last month's atmosphere has disappeared, and the sky has all the ashen or pearly obscurity of the Arctic summer.

"May 26, Friday.—I get little done; but I have too much to attend to in my weak state to journalize. Thermometer above freezing-point, without the sun to-day.

"May 27, Saturday.—Everything showing that the summer changes have commenced. The ice is rapidly losing its integrity, and a melting snow has fallen for the last two days,—one of those comforting home-snows that we have not seen for so long.

The sum-
mer
changes.

"May 28, Sunday.—Our day of rest and devotion. It was a fortnight ago last Friday since our poor friend Pierre died. For nearly two months he had been struggling against the enemy with a resolute will and mirthful spirit, that seemed sure of victory. But he sunk in spite of them.

A day of
rest.

"The last offices were rendered to him with the same careful ceremonial that we observed at Baker's funeral. There were fewer to walk in the procession; but the body was encased in a decent pine coffin and carried to Observatory Island, where it was placed side by side with that of his messmate. Neither could yet be buried; but it is hardly necessary to say that the frost has embalmed their remains. Dr. Hayes read the chapter from Job which has consigned so many to their last resting-place, and a little snow was sprinkled upon the face of the coffin. Pierre was a volunteer not only of our general expedition, but of the party with which he met his death-blow. He was a gallant man, a universal favourite on board, always singing some Béranger ballad or other, and so elastic in his merriment, that even in his last sickness he cheered all that were about him."

Pierre's
funeral

CHAPTER XX.

SEAL-HUNTING—SIR JOHN FRANKLIN—RESOURCES—ACCLIMATIZATION—
THE "HOPE"—DR. HAYES'S RETURN—HIS JOURNEY—SNOW-BLINDNESS
—CAPE HAYES—THE DOGS TANGLED—MENDING THE HARNESS—CAPES
LEIDY AND FRAZER—DOBBIN BAY—FLETCHER WEBSTER HEADLAND—
PETER FORCE BAY—NEW PARTIES—THEIR ORDERS—PROGRESS OF
SEASON—THE SEAL—THE NETSIK AND USUK—A BEAR—OUR ENCOUNTER
—CHANGE IN THE FLOE.

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Ice and
snow
melting.

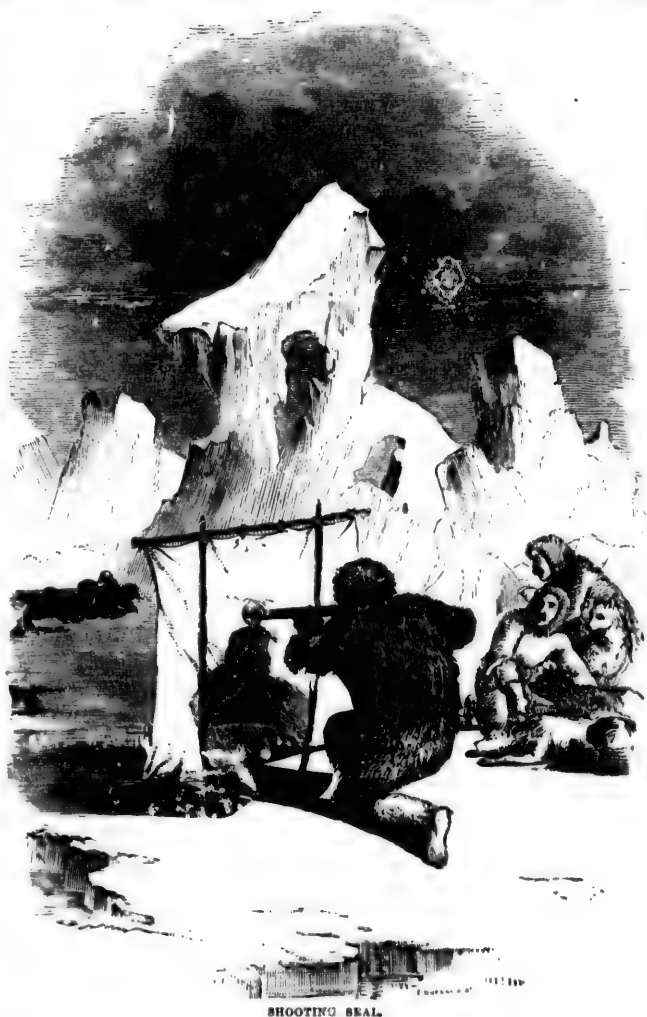
"May 30, Tuesday.—We are gleaning fresh water from the rocks, and the icebergs begin to show commencing streamlets. The great floe is no longer a Sahara, if still a desert. The floes are wet, and their snow dissolve readily under the warmth of the foot, and the old floe begins to shed fresh water into its hollows. Puddles of salt water collect around the ice-foot. It is now hardly recognisable,—rounded, sunken, broken up with water-pools overflowing its base. Its diminished crusts are so percolated by the saline tides, that neither tables nor broken fragments unite any longer by freezing. It is lessening so rapidly that we do not fear it any longer as an enemy to the brig. The berg indeed vanished long before the sun-thermometers indicated a noon-temperature above 32°.

Limited
influence
of thaw

"The changes of this ice at temperatures far below the freezing-point confirm the views I formed upon my last cruise as to the limited influence of direct thaw. I am convinced that the expansion of the ice after the contraction of low temperatures, and the infiltrative or endosmometric changes thus induced,—the differing temperatures of sea-water and ice, and their chemical relations,—the mechanical action of pressure, collapse, fracture, and disruption,—the effects of sun-heated snow-surfaces, falls of warm snow, currents, wind, drifts, and wave-action,—all these leave the great mass of the Polar ice-surfaces so broken, disintegrated, and reduced, when the extreme cold abates, and so changed in structure and molecular character, that the few weeks of summer thaw have but a subsidiary office to perform in completing their destruction.

"Seal of the Hispid variety, the Netsik of the Esquimaux and CHAPTER
Danes, grow still more numerous on the level floes, lying XX.

Seal on
the floes.



SHOOTING SEAL.

cautiously in the sun beside their *atluka*.⁷ By means of the
Esquimaux stratagem of a white screen pushed forward on a

CHAPTER
XX.Resources
for food.

sledge until the concealed hunter comes within range, Hans has shot four of them. We have more fresh meat than we can eat. For the past three weeks we have been living on ptarmigan, rabbits, two reindeer, and seal.

"They are fast curing our scurvy. With all these resources,—coming to our relief so suddenly too,—how can my thoughts turn despairingly to poor Franklin and his crew ?

". . . . Can they have survived ? No man can answer with certainty ; but no man without presumption can answer in the negative.

"If, four months ago,—surrounded by darkness and bowed down by disease,—I had been asked the question, I would have turned toward the black hills and the frozen sea, and responded in sympathy with them, 'No.' But with the return of light a savage people come down upon us, destitute of any but the rudest appliances of the chase, who were fattening on the most wholesome diet of the region, only forty miles from our anchorage, while I was denouncing its scarcity.

Animal
food in
winter.

"For Franklin everything depends upon locality ; but, from what I can see of Arctic exploration thus far, it would be hard to find a circle of fifty miles' diameter entirely destitute of animal resources. The most solid winter-ice is open here and there in pools and patches worn by currents and tides. Such were the open spaces that Parry found in Wellington Channel ; such are the stream-holes (stromhols) of the Greenland coast, the polynia of the Russians ; and such we have ourselves found in the most rigorous cold of all.

"To these spots the seal, the walrus, and the early birds crowd in numbers. One which kept open, as we find from the Esquimaux, at Littleton Island, only forty miles from us, sustained three families last winter until the opening of the north water. Now, if we have been entirely supported for the past three weeks by the hunting of a single man,—seal-meat alone being plentiful enough to subsist us till we turn homeward,—certainly a party of tolerably skilful hunters might lay up an abundant stock for the winter. As it is, we are making caches of meat under the snow, to prevent it spoiling on our hands, in the very spot which a few days ago I described as a Sahara. And, indeed, it was so for nine whole months, when this flood of animal life burst upon us like fountains of water and pastures and date-trees in a southern desert.

"I have undergone one change in opinion. It is of the ability of Europeans or Americans to inure themselves to an ultra-Arctic climate. God forbid, indeed, that civilized man should be exposed for successive years to this blighting darkness! but around the Arctic circle, even as high as 72° , where cold and cold only is to be encountered, men may be acclimatized, for there is light enough for out-door labour.

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How near
the Arctic
circle men
may be
acclima-
tized.

"Of the one hundred and thirty-six picked men of Sir John Franklin in 1846, Northern Orkney men, Greenland whalers, so many young and hardy constitutions, with so much intelligent experience to guide them, I cannot realize that some may not yet be alive; that some small squad or squads, aided or not aided by the Esquimaux of the expedition, may not have found a hunting-ground, and laid up from summer to summer enough of fuel and food and seal-skins to brave three or even four more winters in succession.

"I speak of the miracle of this bountiful fair season. I could hardly have been much more surprised if these black rocks, instead of sending out upon our solitude the late inroad of yelling Esquimaux, had sent us naturalized Saxons. Two of our party at first fancied they were such.

"The mysterious compensations by which we adapt ourselves to climate are more striking here than in the tropics. In the Polar zone the assault is immediate and sudden, and, unlike the insidious fatality of hot countries, produces its results rapidly. It requires hardly a single winter to tell who are to be the heat-making and acclimatized men. Petersen, for instance, who has resided for two years at Upernavik, seldom enters a room with a fire. Another of our party, George Riley, with a vigorous constitution, established habits of free exposure, and active, cheerful temperament, has so inured himself to the cold that he sleeps on our sledge-journeys without a blanket or any other covering than his walking-suit, while the outside temperature is 30° below zero. The half-breeds of the coast rival the Esquimaux in their powers of endurance.

Compensa-
tions by
which we
adapt our
selves to
climate.

"There must be many such men with Franklin. The North British sailors of the Greenland seal and whale fisheries I look upon as inferior to none in capacity to resist the Arctic climates.

"My mind never realizes the complete catastrophe, the destruc-

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XX.

Hopes of
finding
Franklin's
party.

tion of all Franklin's crews. I picture them to myself broken into detachments, and my mind fixes itself on one little group of some thirty, who have found the open spot of some tidal eddy, and, under the teachings of an Esquimaux, or perhaps one of their own Greenland whalers, have set bravely to work, and trapped the fox, speared the bear, and killed the seal and walrus and whale. I think of them ever with hope. I sicken not to be able to reach them.

"It is a year ago to-day since we left New York. I am not as sanguine as I was then: time and experience have chastened me. There is everything about me to check enthusiasm and moderate hope. I am here in forced inaction, a broken-down man, oppressed by cares, with many dangers before me, and still under the shadow of a hard wearing winter, which has crushed two of my best associates. Here, on the spot, after two unavailing expeditions of search, I hold my opinions unchanged; and I record them as a matter of duty upon a manuscript which may speak the truth when I can do so no longer.

Return of
Dr. Hayes.

"June 1, *Thursday*.—At ten o'clock this morning the wail of the dogs outside announced the return of Dr. Hayes and William Godfrey. Both of them were completely snow-blind, and the doctor had to be led to my bedside to make his report. In fact, so exhausted was he, that in spite of my anxiety I forbore to question him until he had rested. I venture to say, that both he and his companion well remember their astonishing performance over stewed apples and seal-meat.

"The dogs were not so foot-sore as might have been expected; but two of them, including poor little Jenny, were completely knocked up. All attention was bestowed upon these indispensable essentials of Arctic search, and soon they were more happy than their masters."

DR. HAYES'S JOURNEY.

Dr
Hayes's
route.

Dr. Hayes made a due north line on leaving the brig; but, encountering the "squeezed ices" of my own party in March, he wisely worked to the eastward. I had advised him to descend to Smith's Sound, under a conviction that the icebergs there would be less numerous, and that the diminished distance from land to land would make his transit more easy. But he managed to effect the object by a less circuitous route than I had anticipated; for,

although he made but fifteen miles on the 20th, he emerged the next day from the heavy ice, and made at least fifty. On this day his meridian observation gave the latitude of $79^{\circ} 8' 6''$, and from a large berg he sighted many points of the coast.

On the 22d he encountered a wall of hummocks, exceeding 20 feet in height, and extending in a long line to the north-east.

After vain attempts to force them, becoming embarrassed in fragmentary ice, worn, to use his own words, into "deep pits and valleys," he was obliged to camp, surrounded by masses of the wildest character, some of them 30 feet in height.

The next three days were spent in struggles through this broken plain; fogs sometimes embarrassed them, but at intervals land could be seen to the north-west. On the 27th they reached the north side of the bay, passing over but few miles of new and unbroken floe.

The excessively broken and rugged character of this ice they encountered must be due to the discharges from the Great Glacier of Humboldt, which arrest the floes, and make them liable to excessive disruption under the influence of winds and currents.



DOGS AMONG BERGS.

Dr. Hayes told me, that in many places they could not have advanced a step but for the dogs. Deep cavities filled with snow

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XX.

Tortuous
travel.

intervened between lines of ice-barricades, making their travel as slow and tedious as the same obstructions had done to the party of poor Brooks before their eventful rescue last March.

Their course was now extremely tortuous ; for although from from the headlands of Rensselaer Harbour to the point which they first reached on the northern coast was not more than ninety miles as the crow flies, yet by the dead reckoning of the party they must have had an actual travel of two hundred and seventy.

Snow
blindness.

For the details of this passage I refer the reader to the appended report of Dr. Hayes. His gravest and most insurmountable difficulty was snow-blindness, which so affected him that for some time he was not able to use the sextant. His journal-entry, referring to the 23d, while tangled in the ice, says, "I was so snow-blind that I could not see ; and as riding, owing to the jaded condition of the dogs, was seldom possible, we were obliged to lay-to."

Cape
Hayes.

It was not until the 25th that their eyesight was sufficiently restored to enable them to push on. In these devious and untrodden ice-fields even the instinct of the dogs would have been of little avail to direct their course. It was well for the party that during this compulsory halt the temperatures were mild and endurable. From their station of the 25th they obtained reliable sights of the coast, trending to the northward and eastward, and a reliable determination of latitude, in $79^{\circ} 24' 4''$. A fine headland, bearing nearly due north-west, I named Cape Hayes, in commemoration of the gentleman who discovered it.

Accumulated
disasters.

Instead, however, of making for the land, which could not have aided their survey, they followed the outer ice, at the same time edging in toward a lofty bluff whose position they had determined by intersection. They hoped here to effect a landing, but encountered a fresh zone of broken ice in the attempt. The hummocks could not be turned. The sledge had to be lifted over them by main strength, and it required the most painful efforts of the whole party to liberate it from the snow between them.

On the 26th, disasters accumulated. William Godfrey, one of the sturdiest travellers, broke down ; and the dogs, the indispensable reliance of the party, were in bad working trim. The rude harness, always apt to become tangled and broken, had been mended so often and with such imperfect means as to be scarcely serviceable.

This evil would seem the annoyance of an hour to the travellers in a stage-coach, but to a sledge-party on the ice-waste it is the gravest that can be conceived. The Esquimaux dog, as I before mentioned, is driven by a single trace, a long thin thong of seal or walrus hide, which passes from his chest over his haunches to the sledge. The team is always driven abreast, and the traces are of course tangling and twisting themselves up incessantly, as the half-wild or terrified brutes bound right or left from their prescribed positions. The consequence is, that the seven or nine or fourteen lines have a marvellous aptitude at knotting themselves up beyond the reach of skill and patience. If the weather is warm enough to thaw the snow, they become utterly soft and flaccid, and the naked hand, if applied ingeniously, may dispense with a resort to the Gordian process; but in the severe cold, such as I experienced in my winter journeys of 1854, the knife is often the only appliance,—an unsafe one if invoked too often, for every new attachment shortens your harness, and you may end by drawing your dogs so close that they cannot pull. I have been obliged to halt and camp on the open floe, till I could renew enough of warmth and energy and patience to disentangle the knots of my harness. Oh, how charitably have I remembered Doctor Slop!

CHAPTER
XX.Harness of
a dog
team.Trial of
patience

It was only after appropriating an undue share of his seal-skin breeches that the leader of the party succeeded in patching up his mutilated dog-lines. He was rewarded, however, for he shortly after found an old floe, over which his sledge passed happily to the north coast. It was the first time that any of our parties had succeeded in penetrating the area to the north. The ice had baffled three organized foot-parties. It could certainly never have been traversed without the aid of dogs; but it is equally certain that the effort must again have failed, even with their aid, but for the energy and determination of Dr. Hayes, and the endurance of his partner, William Godfrey. The latitude by observation was 79° 45' N., the longitude 69° 12' W. The coast here trended more to the westward than it had done. It was sighted for thirty miles to the northward and eastward. This was the culminating point of his survey, beyond which his observations did not extend. Two large headlands, Capes Joseph Leidy and John Frazer, indicate it.

Mending
the har-
ness.Capes
Leidy and
Frazer.

CHAPTER
XX.

The cliffs were of mingled limestone and sandstone, corresponding to those on the southern side of Peabody Bay. To the north they exceeded 2000 feet in height, while to the southward they diminished to 1200. The ice-foot varied from 50 to 150 feet in width, and stood out against the dark debris thrown down by the cliffs in a clean naked shelf of dazzling white.

Mending
the sledge.

The party spent the 28th in mending the sledge, which was completely broken, and feeding up their dogs for a renewal of the journey. But, their provisions being limited, Dr. Hayes did not deem himself justified in continuing to the north. He determined to follow and survey the coast toward Cape Sabine.

Forced to
return.

His pemmican was reduced to eighteen pounds; there was apparently no hope of deriving resources from the hunt; and the coasts were even more covered with snow than those he had left on the southern side. His return was a thing of necessity.

Dobbin
Bay.

The course of the party to the westward along the land-ice was interrupted by a large indentation, which they had seen and charted while approaching the coast. It is the same which I surveyed in April 1855, and which now bears the name of the Secretary of the Navy, Mr. Dobbin. Dr. Hayes discovered two islands near its entrance. He saw also on its south-western side a lofty pyramid, truncated at its summit, which corresponded both in its bearings and position with the survey of my April journey.

Cape
Sabine.

The latter portion of Dr. Hayes's journey was full of incident. The land-ice was travelled for a while at the rate of five or six miles an hour; but, after crossing Dobbin Bay, the snows were an unexpected impediment, and the ice-foot was so clogged that they made but fifteen miles from camp to camp on the floes. After fixing the position of Cape Sabine, and connecting it with the newly-discovered coast-line to the north and east, he prepared to cross the bay further to the south.

Most providentially they found this passage free from bergs; but their provisions were nearly gone, and their dogs were exhausted. They threw away their sleeping-bags, which were of reindeer-skin and weighed about twelve pounds each, and abandoned, besides, clothing enough to make up a reduction in weight of nearly fifty pounds. With their load so lightened, they were enabled to make good the crossing of the bay. They

landed at Peter Force Bay, and reached the brig on the 1st of June.

This journey connected the northern coast with the survey of my predecessor; but it disclosed no channel or any form of exit from this bay.

It convinced me, however, that such a channel must exist; for this great curve could be no cul-de-sac. Even were my observations since my first fall journey of September 1853, not decisive on this head, the general movement of the icebergs, the character of the tides, and the equally sure analogies of physical geography, would point unmistakably to such a conclusion.

To verify it, I at once commenced the organization of a double party. This, which is called in my Report the North-east Party, was to be assisted by dogs, but was to be subsisted as far as the Great Glacier by provisions carried by a foot-party in advance.

For the continuation of my plans I again refer to my journal.

"June 2, Friday.—There is still this hundred miles wanting to the north-west to complete our entire circuit of this frozen water. This is to be the field for our next party. I am at some loss how to organize it. For myself, I am down with scurvy. Dr. Hayes is just from the field, worn-out and snow-blind. His health-roll makes a sorry parade. It runs thus:—

Officers.

MR. BROOKS	Unhealed stump.
MR. WILSON	do.
MR. SONTAG	Down with scurvy.
MR. BONSTALL	Scurvy knee, but mending.
MR. PETERSEN	General scurvy.
MR. GOODFELLOW	Scurvy.
MR. OHLSEN	Well.
MR. M'GARY	Well.

Crew.

WILLIAM MORTON	Nearly recovered.
THOMAS HICKEY	Well.
GEORGE WHIPPLE	Scurvy.
JOHN BLAKE	Scurvy.
HANS CRISTIAN	Well.
GEORGE RILEY	Sound.
GEORGE STEPHENSON	Scurvy from last journey.
WILLIAM GODFREY	Snow-blind.

"June 3, Saturday.—M'Gary, Bonsall, Hickey, and Riley were

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Return to the brig.

A new party.

The health roll of Dr. Hayes's party.

CHAPTER
XX.

detailed for the first section of the new parties: they will be accompanied by Morton, who has orders to keep himself as fresh as possible, so as to enter on his own line of search to the greatest possible advantage. I keep Hans a while to recruit the dogs, and do the hunting and locomotion generally for the rest of us; but I shall soon let him follow, unless things grow so much worse on board as to make it impossible.

Route.

"They start light, with a large thirteen-foot sledge, arranged with broad runners on account of the snow, and are to pursue my own last track, feeding at the caches which I deposited, and aiming directly for the glacier barrier on the Greenland side. Here, sustained as I hope by the remnants of the great cache of last fall, they will survey and attempt to scale the ice, to look into the interior of the great *mer de glace*.

"My notion is, that the drift to the southward both of berg and floe, not being reinforced from the glacier, may leave an interval of smooth frozen ice; but if this route should fail, there ought still to be a chance by sheering to the southward and westward and looking out for openings among the hummocks.

"I am intensely anxious that this party should succeed; it is my last throw. They have all my views, and I believe they will carry them out unless overruled by a higher power.

Arrange-
ments.

"Their orders are, to carry the sledge forward as far as the base of the Great Glacier, and fill up their provisions from the cache of my own party of last May. Hans will then join them with the dogs; and, while M'Gary and three men attempt to scale and survey the glacier, Morton and Hans will push to the north across the bay with the dog-sledge, and advance along the more distant coast. Both divisions are provided with claspers, to steady them and their sledges on the irregular ice-surfaces; but I am not without apprehensions that, with all their efforts, the glacier cannot be surmounted.

"In this event, the main reliance must be on Mr. Morton. He he takes with him a sextant, artificial horizon, and pocket chronometer, and has intelligence, courage, and the spirit of endurance, in full measure. He is withal a long-tried and trust-worthy follower.

"*June 5, Monday.*—The last party are off; they left yesterday at 2 P.M. I can do nothing more but await the ice-changes

that are to determine for us our liberation or continued imprisonment. CHAPTER XX.

"The sun is shining bravely, and the temperature feels like a Sunshine home summer.

"A *sanderling*, the second migratory land-bird we have seen, came to our brig to-day, and is now a specimen.

"June 6, Tuesday.—We are a parcel of sick men, affecting to keep ship till our comrades get back. Except Mr. Ohlsen and George Whipple, there is not a sound man among us. They wearily in our Castle of Indolence, for 'labour dire it was, and weary woe,' we have been watching the changing days, and noting bird and insect and vegetable, as it tells us of the coming summer. One fly buzzed around William Godfrey's head to-day,—he could not tell what the species was; and Mr. Petersen brought in a cocoon from which the grub had eaten its way to liberty. Hans gives us a seal almost daily, and for a passing luxury we have ptarmigan and hare. The little snow-birds have crowded to Butler Island, and their songs penetrate the cracks of our rude housing. Another snipe, too, was mercilessly shot the very day of his arrival. Animals and birds appear.

"The andromeda shows green under its rusty winter-dried stems; the willows are sappy and puffing, their catkins of last year dropping off. Draba, lichens, and stellaria, can be detected by an eye accustomed to this dormant vegetation, and the stone-crops are really green and juicy in their centres; all this under the snow. So we have assurance that summer is coming; though our tide-hole freezes every night alongside, and the ice-floe seems to be as fast as ever. Growth of vegetation.

"June 8, Thursday.—Hans brings us in to-day a couple of Seal. seal; all of them as yet are of the Rough or Hispid species. The flesh of this seal is eaten universally by the Danes of Greenland, and is almost the staple diet of the Esquimaux. When raw, it has a flabby look, more like coagulated blood than muscular fibre; cooking gives it a dark soot-colour. It is close-grained, but soft and tender, with a flavour of lamp-oil—a mere *soupeon*, however, for the blubber, when fresh, is at this season sweet and delicious.

"The seal are shot lying by their *atluk* or breathing-holes. As the season draws near midsummer, they are more approachable;

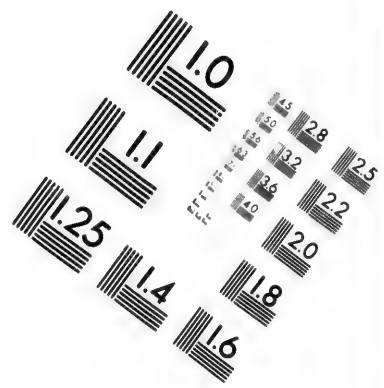
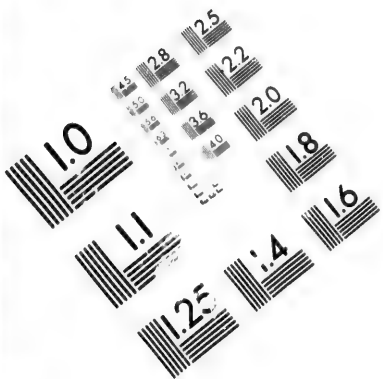
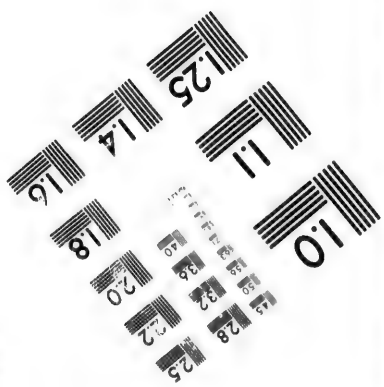
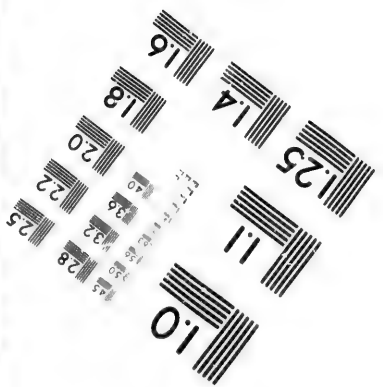
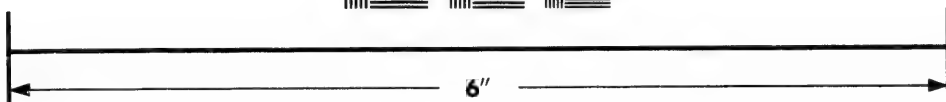
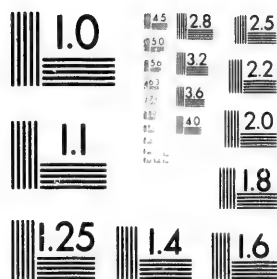
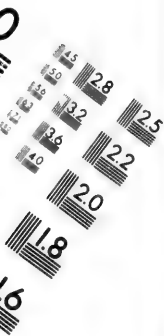


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CHAPTER XX.
Seal
cooked in
the sun.

their eyes being so congested by the glare of the sun that they are sometimes nearly blind. Strange to say, a few hours' exposure of a recently-killed animal to the sun blisters and destroys the hide; or, as the sealers say, cooks it. We have lost several skins in this way. Each seal yields a liberal supply of oil, the average thus far being five gallons each."

Besides the Hispid seal, the only species which visited Rensselaer Harbour was the *Phoca barbata*, the large bearded seal, or *usuk* of the Esquimaux. I have measured these ten feet in length, and eight in circumference, of such unwieldy bulk as not unfrequently to be mistaken for the walrus.

The
netsik.

The netsik will not perforate ice of more than one season's growth, and are looked for, therefore, where there was open water the previous year. But the bearded seals have no *atluk*. They depend for respiration upon the accidental chasms in the ice, and are found wherever the bergs or floes have been in motion. They are thus more diffused in their range than their sun-basking little brethren, who crowd together in communities, and in some places absolutely through the level ices.

The usuk.

The *usuk* appears a little later than the *netsik*, and his coming is looked for anxiously by the Esquimaux. The lines, *atlunak*, which are made from his skin, are the lightest and strongest and most durable of any in use. They are prized by the hunters in their contests with the walrus.

Atlunak
now made.

To obtain the *atlunak* in full perfection, the animal is skinned in a spiral, so as to give a continuous coil from head to tail. This is carefully chewed by the teeth of the matrons, and after being well greased with the burnt oil of their lamps, is hung up in their huts to season. At the time referred to in my journal, Anoatok was completely festooned with them.

On one occasion, while working my way toward the Esquimaux huts, I saw a large *usuk* basking asleep upon the ice. Taking off my shoes, I commenced a somewhat refrigerating process of stalking, lying upon my belly, and crawling along step by step behind the little knobs of floe. At last, when I was within long rifle shot, the animal gave a sluggish roll to one side, and suddenly lifted his head. The movement was evidently independent of me, for he strained his neck in nearly the opposite direction. Then, for the first time, I found that I had a

rival seal-hunter in a large bear, who was, on his belly like myself, waiting with commendable patience and cold feet for a chance of nearer approach.

CHAPTER

XX.
A bear
watching
seal.



ESKIMAUX APPROACHING A SEAL.

What should I do? the bear was doubtless worth more to me than the seal; but the seal was now within shot, and the bear "a bird in the bush." Besides, my bullet once invested in the seal would leave me defenceless. I might be giving a dinner to the bear and saving myself for his dessert. These meditations were soon brought to a close; for a second movement of the seal so aroused my hunter's instincts that I pulled the trigger. My cap alone exploded. Instantly, with a floundering splash, the seal descended into the deep, and the bear with three or four rapid leaps, stood disconsolately by the place of his descent. For a single moment we stared each other in the face, and then, with that discretion which is the better part of valour, the bear ran off in one direction, and I followed his example in the other.

A difficult
choice.

The generally-received idea of the Polar bear battling with the walrus meets little favour among the Eskimaux of Smith's Straits.

CHAPTER
XX.

My own experience is directly adverse to the truth of the story. The walrus is never out of reach of water, and, in his peculiar element, is without a rival. I have seen the bear follow the usuk by diving; but the tough hide and great power of the walrus forbid such an attack.

Observa-
tory.

"June 9, *Friday*.—To-day I was able to walk out upon the floe for the first time. My steps were turned to the observatory, where, close beside the coffins of Baker and Schubert, Sontag was at work with the unifilar, correcting the winter disturbances. Our local deviation seems to have corrected itself; the iron in our com-
fortless little cell seems to have been so distributed that our results were not affected by it.

Change on
the floe-
ice.

"I was very much struck by the condition of the floe-ice. Hitherto I have been dependent upon the accounts of my mess-mates, and believed that the work of thaw was going on with extreme rapidity. They are mistaken; we have a late season. The ice-foot has not materially changed either in breadth or level, and its base has been hardly affected at all, except by the overflow of the tides. The floe, though undergoing the ordinary molecular changes which accompany elevation of temperature, shows less surface change than the Lancaster Sound ices in early May. All this, but especially the condition of the ice-foot, warns me to prepare for the contingency of not escaping. It is a momentous warning. We have no coal for a second winter here; our stock of fresh provisions is utterly exhausted; and our sick need change, as essential to their recovery.

Plants.

"The willows are tolerably forward on Butler Island. Poor, stunted crawlers, they show their expanded leaflets against the grey rocks. Among these was the Bear berry (*S. uva ursi*), known its reputation with the Esquimaux to the south as a remedy for scurvy, I gleaned leaves enough for a few scanty mouthfuls. The lichens are very conspicuous; but the mosses and grasses and beaths have not yet made their appearance in the little valley between the rocks."

CHAPTER XXI.

PROGRESS OF SEASON—PLANTS IN WINTER—BIRDS RETURNING—COCH-
LEARIA—THE PLANTS.

"June 10, *Saturday*.—Hans was ordered yesterday to hunt in the direction of the Esquimaux huts, in the hope of determining the position of the open water. He did not return last night; but Dr. Hayes and Mr. Ohlsen, who were sent after him this morning with the dog-sledge, found the hardy savage fast asleep not five

CHAPTER
XXI.

Hans out
hunting.



DRAGGING SEAL.

miles from the brig. Along side of him was a large usuk or bearded seal (*P. barbata*), shot, as usual, in the head. He had dragged it for seven hours over the ice-foot. The dogs having now recruited, he started light to join Morton at the glacier.

"June 11, *Sunday*.—Another walk on shore showed me the vegetation. The andromeda in flower, and the saxifrages and carices green under the dried tufts of last year. This rapidly-maturing vegetation is of curious interest. The andromeda tetragona had advanced

CHAPTER
XXI.
Plants.

rapidly toward fructification without a corresponding development of either stalk or leaflet. In fact, all the heaths—and there were three species around our harbour—had a thoroughly moorland and stunted aspect. Instead of the graceful growth which should characterize them, they showed only a low, scrubby sod or turf, yet studded with flowers. The spots from which I gathered them were well infiltrated with melted snows, and the rocks enclosed them so as to aid the solar heat by reverberation. Here, too, silene and cerathium, as well as the characteristic flower-growths of the later summer, the poppy, and sorrel, and saxifrages, were already recognisable.

Value of
the snow
covering.

“Few of us at home can realize the protecting value of this warm coverlet of snow. No eider-down in the cradle of an infant is tucked in more kindly than the sleeping-dress of winter about this feeble flower-life. The first warm snows of August and September falling on a thickly-pleached carpet of grasses, heaths, and willows, enshrine the flowery growths which nestle round them in a non-conducting air-chamber; and, as each successive snow increases the thickness of the cover, we have, before the intense cold of winter sets in, a light cellular bed covered by drift, six, eight, or ten feet deep, in which the plant retains its vitality. The frozen subsoil does not encroach upon this narrow zone of vegetation. I have found in midwinter, in this high latitude of $78^{\circ} 50'$, the surface so nearly moist as to be friable to the touch; and upon the ice-floes, commencing with a surface temperature of -30° , I found at two feet deep a temperature of -8° , at four feet $+2^{\circ}$, and at eight feet $+26^{\circ}$. This was on the largest of a range of east and west hummock-drifts in the open way of Cape Stafford. The glacier which we became so familiar with afterward at Etah yields an uninterrupted stream throughout the year.

Conduct-
ing power
of snow.

“My experiments prove that the conducting power of the snow is proportioned to its compression by winds, rains, drifts, and congelation. The early spring and late fall and summer snows are more cellular and less condensed than the nearly impalpable powder of winter. The drifts, therefore, that accumulate during nine months of the year, are dispersed in well-defined layers of differing density. We have first the warm cellular snows of fall which surround the plant, next the fine impacted snow dust of winter, and above these the later humid deposits of the spring.

"It is interesting to observe the effects of this disposition of layers upon the safety of the vegetable growths below them. These, at least in the earlier summer, occupy the inclined slopes that face the sun, and the several strata of snow take of course the same inclination. The consequence is, that as the upper snow is dissipated by the early thawings, and sinks upon the more compact layer below, it is to a great extent arrested, and runs off like rain from a slope of clay. The plant reposes thus in its cellular bed, guarded from the rush of waters, and protected too from the nightly frosts by the icy roof above it.

CHAPTER
XXI.
Plants
under
snow

"June 16, Friday.—Two long-tailed ducks (*Harelda glacialis*) visited us, evidently seeking their breeding-grounds. They are beautiful birds, either at rest or on the wing. We now have the snow-birds, the snipe, the burgomaster gull, and the long-tailed duck, enlivening our solitude; but the snow-birds are the only ones in numbers, crowding our rocky islands, and making our sunny night-time musical with home-remembered songs. Of each of the others we have but a solitary pair, who seem to have left their fellows for this far northern mating-ground in order to live unmolested. I long for specimens; but they shall not be fired at.

Water
fowl.

The ptarmigan show a singular backwardness in assuming the summer feathering. The male is still entirely white; except, in some specimens, a few brown feathers on the crown of the head. The female has made more progress, and is now well coated with her new plumage, the coverts and quill-feathers still remain white. At Upernavik, in lat. 73°, they are already in full summer costume.

Ptar-
migan.

"June 18, Sunday.—Another pair of long-tailed ducks passed over our bay, bound for further breeding-grounds; we saw also an ivory-gull and two great northern divers (*Colymbus glacialis*), the most imposing birds of their tribe. These last flew very high, emitting at regular intervals their reed-like 'kawk.'

Ducks and
gulls.

"Mr. Ohlsen and Dr. Hayes are off on an overland tramp. I sent them to inspect the open water to the southward. The immovable state of the ice-foot gives me anxiety: last year, a large bay above us was closed all summer; and the land-ice, as we find it here, is as perennial as the glacier.

"June 20, Tuesday.—This morning, to my great surprise,

CHAPTER
XXI.
Cochlearia.

Petersen brought me quite a handful of scurvy-grass (*C. fenestrata*). In my fall list of the stunted flora here, it had quite escaped my notice. I felt grateful to him for his kindness, and, without the affectation of offering it to any one else, ate it at once. Each plant stood about one inch high, the miniature leaves expanding throughout a little radius of hardly one inch more. Yet, dwarfed as it was, the fructifying process was nearly perfected; the buds already expanding and nearly ready to burst. We found cochlearia afterward at Littleton Island, but never in any quantity north of Cape Alexander. Although the melted snows distil freely over the darker rocks (porphyries and greenstones), it is a rare exception to note any vegetable discoloration of the surface beneath. There are few signs of those confervaceous growths which are universal as high as Upernavik. The nature of this narrative does not permit me to indulge in matters unconnected with my story: I cite these in passing, as among the indications of our high northern latitude.

The summer solstice.

"June 21, *Wednesday*.—A snow, moist and flaky, melting upon our decks, and cleaning up the dingy surface of the great ice-plain with a new garment. We are at the summer solstice, the day of greatest solar light! Would that the traditionally-verified but meteorologically-disproved equinoctial storm could break upon us, to destroy the tenacious flocs!

"June 22, *Thursday*.—The ice changes slowly, but the progress of vegetation is excessively rapid. The growth on the rocky group near our brig is surprising.

Elder ducks.

"June 23, *Friday*.—The eiders have come back: a pair were seen in the morning, soon followed by four ducks and drakes. The poor things seemed to be seeking breeding-grounds, but the ice must have scared them. They were flying southward.

"June 25, *Sunday*.—Walked on shore and watched the changes: andromeda in flower, poppy and ranunculus the same: saw two snipe and some tern.

"Mr. Ohlsen returned from a walk with Mr. Petersen. They saw reindeer, and brought back a noble specimen of the king duck. It was a solitary male, resplendent with the orange, black, and green of his head and neck.

"Stephenson is better; and I think that a marked improvement, although a slow one, shows itself in all of us. I work the men

lightly, and allow plenty of basking in the sun. In the afternoon we walk on shore, to eat such succulent plants as we can find amid the snow. The pyrola I have not found, nor the cochlearia, save in one spot, and then dwarfed. But we have the lychnis, the young sorrel, the andromeda, the draba, and the willow-bark; this last an excellent tonic, and, in common with all the Arctic vegetable astringents, I think, powerfully antiscorbutic."

CHAPTER
XXI.
Succulent
plants.

CHAPTER XXII.

MR. BONSTALL'S RETURN—HIS STORY—THE BEAR IN CAMP—HIS FATE—
BEARS AT SPORT—THE THAWS.

CHAPTER
XXII.

Return of
M'Gary
and Bon-
sall.

Satisfac-
tory obser-
vations.

"June 27, *Tuesday*.—M'Gary and Bonsall are back with Hickey and Riley. They arrived last evening : all well, except that the snow has affected their eyesight badly, owing to the scorbutic condition of their systems. Mr. M'Gary is entirely blind, and I fear will be found slow to cure. They have done admirably. They bring back a continued series of observations, perfectly well kept up, for the further authentication of our survey. They had a good chronometer, artificial horizon, and sextant, and their results correspond entirely with those of Mr. Sontag and myself. They are connected, too, with the station at Chimney Rock, Cape Thackeray, which we have established by theodolite. I may be satisfied now with our projection of the Greenland coast. The different localities to the south have been referred to the position of our winter harbour, and this has been definitely fixed by the labours of Mr. Sontag, our astronomer. We have, therefore, not only a reliable base, but a set of primary triangulations, which, though limited, may support the minor field-work of our sextants.

JOURNEY OF MESSRS. M'GARY AND BONSTALL.

"They left the brig on the 3d, and reached the Great Glacier on the 15th, after only twelve days of travel. They showed great judgment in passing the bays ; and, although impeded by the heavy snows, would have been able to remain much longer in the field, but for the destruction of our provision-depôts by the bears.

"I am convinced, however, that no efforts of theirs could have scaled the Great Glacier ; so that the loss of our provisions, though certainly a very serious mishap, cannot be said to have caused their failure. They were well provided with pointed staves, foot-clampers, and other apparatus for climbing ice ; but, from all they tell me, any attempt to scale this stupendous glacial mass would have been

madness ; and I am truly glad that they desisted from it before fatal accident befell them. CHAPTER
XXII.

"Mr Bonsall is making out his report of the daily operations of this party. It seems that the same heavy snow which had so much interfered with my travel in April and May still proved their greatest drawback. It was accumulated particularly between the headlands of the bays ; and, as it was already affected by the warm sun, it called for great care in crossing it. They encountered drifts which were altogether impenetrable, and in such cases could only advance by long circuits, after reconnoitring from the top of icebergs. Snow
drifts.

"I have tried in vain to find out some good general rule, when traversing the ice near the coast, to avoid the accumulation of snows and hummock-ridges. It appears that the direct line between headland and headland or cape and cape is nearly always obstructed by broken ice ; while in the deep recesses the grounded ice is even worse. I prefer a track across the middle of the bay, outside of the grounded ices and inside of the hummock-ridges ; unless, as sometimes happens, the late fall-ice is to be found extending in level flats outside. Rules for
crossing
the ice.

"This is evidently the season when the bears are in most abundance. Their tracks were everywhere, both on shore and upon the floes. One of them had the audacity to attempt intruding itself upon the party during one of their halts upon the ice ; and Bonsall tells a good story of the manner in which they received and returned his salutations. It was about half an hour after midnight, and they were all sleeping away a long day's fatigue, when M'Gary either heard or felt, he could hardly tell which, something that was scratching at the snow immediately by his head. It waked him just enough to allow him to recognise a huge animal actively engaged in reconnoitring the circuit of the tent. His startled outcry aroused his companion-inmates, but without in any degree disturbing the unwelcome visitor ; specially unwelcome at that time and place, for all the guns had been left on the sledge, a little distance off, and there was not so much as a walking pole inside. There was, of course, something of natural confusion in the little council of war. The first impulse was to make a rush for the arms ; but this was soon decided to be very doubtfully practicable, if at all ; for the bear, having satisfied himself with his observations of the An un-
welcome
visitor.

CHAPTER exterior, now presented himself at the tent opening. Sundry vol-
XXII. leys of lucifer matches and some impromptu torches of newspaper



THE BEAR IN CAMP.

were fired without alarming him, and, after a little while, he planted himself at the doorway and began making his supper upon the carcass of a seal which had been shot the day before.

A sortie
from the
postern.

"Tom Hickey was the first to bethink him of the military device of a sortie from the postern, and, cutting a hole with his knife, crawled out at the rear of the tent. Here he extricated a boat-hook, that formed one of the supporters of the ridge-pole, and made it the instrument of a right valorous attack. A blow well administered on the nose caused the animal to retreat for the moment a few paces beyond the sledge, and Tom, calculating his distance nicely, sprang forward, seized a rifle, and fell back in safety upon his comrades. In a few seconds more, Mr. Bonsall had sent a ball through and through the body of his enemy. I was assured that after this adventure the party adhered to the custom I had enjoined, of keeping at all times a watch and fire-arms inside the camping-tent.

The last
cache
destroyed.

"The final cache, which I relied so much upon, was entirely destroyed. It had been built with extreme care, of rocks which had been assembled by very heavy labour, and adjusted with much aid

often from capstan-bars as levers. The entire construction was, so far as our means permitted, most effective and resisting. Yet these tigers of the ice seemed to have scarcely encountered an obstacle. Not a morsal of pemmican remained except in the iron cases, which, being round with conical ends, defied both claw and teeth. They had rolled and pawed them in every direction, tossing them about like footballs, although over eighty pounds in weight. An alcohol-case, strongly iron-bound, was dashed into small fragments, and a tin can of liquor mashed and twisted almost into a ball. The claws of the beast had perforated the metal, and torn it up as with a cold chisel.

"They were too dainty for salt meats: ground coffee they had an evident relish for: old canvas was a favourite for some reason or other; even our flag, which had been reared 'to take possession' of the waste, was gnawed down to the very staff. They had made a

CHAPTER
XXII.

The destruction
caused by
the bears.



THE CACHE DESTROYED.

regular frolic of it; rolling our bread-barrels over the ice-foot and into the broken outside ice; and, unable to masticate our heavy India-rubber cloth, they had tied it up in unimaginable hard knots.

"McGarry describes the whole area around the cache as marked by the well-worn paths of these animals; and an adjacent slope of

CHAPTER
XXII.

The bears' sport.

ice-covered rock, with an angle of 45° , was so worn and covered with their hair, as to suggest the idea that they had been amusing themselves by sliding down it on their haunches. A performance, by the way, in which I afterward caught them myself.

"June 28, *Wednesday*.—Hans came up with the party on the 17th. Morton and he are still out. They took a day's rest; and then, 'following the old tracks,' as M'Gary reports, 'till they were clear of the cracks near the islands, pushed northward at double-quick time. When last seen, they were both of them walking, for the snow was too soft and deep for them to ride with their heavy load.' Fine weather, but the ice yields reluctantly."

Anxiety for absent friends.

While thus watching the indications of advancing summer, my mind turned anxiously to the continued absence of Morton and Hans. We were already beyond the season when travel upon the ice was considered practicable by our English predecessors in Wellington Channel, and, in spite of the continued solidity around us, it was unsafe to presume too much upon our high northern position.

The ice, although seemingly as unbroken as ever, was no longer fit for dog-travel; the floes were covered with water-pools, many of which could not be forded by our team; and, as these multiplied with the rapidly-advancing thaws, they united one with another, chequering the level waste with an interminable repetition of confluent lakes. These were both embarrassing and dangerous. Our little brig was already so thawed out where her sides came in contact with her icy cradle as to make it dangerous to descend without a gangway, and our hunting parties came back wet to the skin.

A joyful return.

It was, therefore, with no slight joy that on the evening of the 10th, while walking with Mr. Bonsall, a distant sound of dogs caught my ear. These faithful servants generally bayed their full-mouthed welcome from afar off, but they always dashed in with a wild speed which made their outcry a direct precursor of their arrival. Not so these well-worn travellers. Hans and Morton staggered beside the limping dogs, and poor Jenny was riding as a passenger upon the sledge. It was many hours before they shared the rest and comfort of our ship.

CHAPTER XXIII.

MORTON'S RETURN—HIS NARRATIVE—PEABODY BAY—THROUGH THE BERGS—BRIDGING THE CHASMS—THE WEST LAND—THE DOGS IN FRIGHT—OPEN WATER—THE ICE-FOOT—THE POLAR TIDES—CAPES JACKSON AND MORRIS—THE CHANNEL—FREE OF ICE—BIRDS AND PLANTS—BEAR AND CUB—THE HUNT—THE DEATH—FRANKLIN AND LAFAYETTE—THE ANT-ARCTIC FLAG—COURSE OF TIDES—MOUNT PARRY—VICTORIA AND ALBERT MOUNTAINS—RESUMÉ—THE BIRDS APPEAR—THE VEGETATION—THE PETREL—CAPE CONSTITUTION—THEORIES OF AN OPEN SEA—ILLUSORY DISCOVERIES—CHANGES OF CLIMATE—A SUGGESTION.

MR. MORTON left the brig with the relief party of M'Gary on the 4th of June. He took his place at the track-lines like the others; but he was ordered to avoid all extra labour, so as to husband his strength for the final passage of the ice. CHAPTER XXIII.
Time of departure.

On the 15th he reached the base of the Great Glacier, and on the 16th was joined by Hans with the dogs. A single day was given to feed and refresh the animals, and on the 18th the two companies parted. Morton's account I have not felt myself at liberty to alter. I give it as nearly as possible in his own words, without affecting any modification of his style.

MORTON'S JOURNEY.

The party left Cache Island at 12.35 A.M., crossing the land-ices by portage, and going south for about a mile to avoid a couple of bad seams caused by the breakage of the glacier. Here Morton and Hans separated from the land-party, and went northward, keeping parallel with the glacier, and from five to seven miles distant. The ice was free from hummocks, but heavily covered with snow, through which they walked knee deep. They camped about eight miles from the glacier, at 7.45, travelling that night about twenty-eight miles. Here a crack allowed them to measure the thickness of the ice: it was seven feet five inches. The thermometer at 6 A.M. gave + 28° for the temperature of the air; 29.2 for the water. Route.
First encampment.

They started again at half-past nine. The ice, at first, was very

CHAPTER
XXIII.Difficulties
of the
journey.

heavy, and they were frequently over their knees in the dry snow ; but, after crossing certain drifts, it became hard enough to bear the sledge, and the dogs made four miles an hour until twenty minutes past four, when they reached the middle of Peabody Bay. They then found themselves among the bergs which on former occasions had prevented other parties from getting through. These were generally very high, evidently newly separated from the glacier. Their surfaces were fresh and glassy, and not like those generally met with in Baffin's Bay,—less worn, and bluer, and looking in all respects like the face of the Grand Glacier. Many were rectangular, some of them regular squares, a quarter of a mile each way ; others, more than a mile long.

Narrow
passages
between
the bergs.

They could not see more than a ship's-length ahead, the icebergs were so unusually close together. Old icebergs bulge and tongue out below, and are thus prevented from uniting ; but these showed that they were lately launched, for they approached each other so nearly that the party were sometimes forced to squeeze through places less than four feet wide, through which the dogs could just draw the sledge. Sometimes they could find no passage between two bergs, the ice being so crunched up between them that they could not force their way. Under these circumstances, they would either haul the sledge over the low tongues of the berg, or retrace their steps, searching through the drift for a practicable road.

This they were not always fortunate in finding, and it was at best a tedious and in some cases a dangerous alternative, for oftentimes they could not cross them ; and, when they tried to double, the compass, their only guide, confused them by its variation.

Persever-
ance.

It took them a long while to get through into smoother ice. A tolerably wide passage would appear between two bergs, which they would gladly follow ; then a narrower one ; then no opening in front, but one to the side. Following that a little distance, a blank ice-cliff would close the way altogether, and they were forced to retrace their steps and begin again. Constantly baffled, but, like true fellows, determined to "go ahead," they at last found a lane some six miles to the west, which led upon their right course. But they were from eight o'clock at night till two or three the next morning, puzzling their way out of the maze, like a blind man in the streets of a strange city.

June 19, Monday.—At 8.45 A.M. they encamped. Morton then

climbed a berg, in order to select their best road. Beyond some bergs he caught glimpses of a great white plain, which proved to be the glacier seen far into the interior; for, on getting up another berg further on, he saw its face as it fronted on the bay. This was near its northern end. It looked full of stones and earth, while large rocks projected out from it and rose above it here and there.

CHAPTER
XXIII.

The glacier in the distance.

They rested till half-past ten, having walked all the time to spare the dogs. After starting, they went on for ten miles, but were then arrested by wide seams in the ice, bergs, and much broken ice. So they turned about, and reached their last camp by twelve, midnight. They then went westward, and, after several trials, made a way, the dogs running well. It took them but two hours to reach the better ice, for the bergs were in a narrow belt.

The chasms between them were sometimes four feet wide, with water at the bottom. These they bridged in our usual manner; that is to say, they attacked the nearest large hummocks with their axes, and, chopping them down, rolled the heaviest pieces they could move into the fissure, so that they wedged each other in. They then filled up the spaces between the blocks with smaller lumps of ice as well as they could, and so contrived a rough sort of bridge to coax the dogs over. Such a seam would take about an hour and a half to fill up well and cross.

The chasms.

On quitting the berg-field, they saw two dovekies in a crack, and shot one. The other flew to the north-east. Here they sighted the northern shore ("West Land"), mountainous, rolling, but very distant, perhaps fifty or sixty miles off. They drove on over the best ice they had met due north. After passing about twelve miles of glacier, and seeing thirty of opposite shore, they camped at 7.20 A.M.

Dovekies.

They were now nearly abreast of the termination of the Great Glacier. It was mixed with earth and rocks. The snow sloped from the land to the ice, and the two seemed to be mingled together for eight or ten miles to the north, when the land became solid, and the glacier was lost. The height of this land seemed about 400 feet, and the glacier lower.

The termination of the Great Glacier.

June 21, Wednesday.—They stood to the north at 11.30 P.M., and made for what Morton thought a cape, seeing a vacancy

CHAPTER
XXIII.Mist and
cold.

between it and the West Land. The ice was good, even, and free from bergs, only two or three being in sight. The atmosphere became thick and misty, and the west shore, which they saw faintly on Tuesday, was not visible. They could only see the cape for which they steered. The cold was sensibly felt, a very cutting wind blowing north-east by north. They reached the opening seen to the westward of the cape by Thursday, 7 A.M. It proved to be a channel; for, as they moved on in the misty weather, a sudden lifting of the fog showed them the cape and the western shore.

The dogs
tremble.

The ice was weak and rotten, and the dogs began to tremble. Proceeding at a brisk rate, they had got upon unsafe ice before they were aware of it. Their course was at the time nearly up the middle of the channel; but, as soon as possible, they turned, and, by a backward circuit, reached the shore. The dogs, as their fashion is, at first lay down and refused to proceed, trembling violently. The only way to induce the terrified, obstinate brutes to get on was for Hans to go to a white-looking spot where the ice was thicker, the soft stuff looking dark; then, calling the dogs coaxingly by name, they would crawl to him on their bellies. So they retreated from place to place, until they reached the firm ice they had quitted. A half-mile brought them to comparatively safe ice, a mile more to good ice again.

Safe ice
again.

In the midst of this danger they had during the liftings of the fog sighted open water, and they now saw it plainly. There was no wind stirring, and its face was perfectly smooth. It was two miles further up the channel than the firm ice to which they had retreated. Hans could hardly believe it. But for the birds that were seen in great numbers, Morton says he would not have believed it himself.

The ice covered the mouth of the channel like a horse-shoe. One end lapped into the west side a considerable distance up the channel, the other covered the cape for about a mile and a half, so that they could not land opposite their camp, which was about a mile and a half from the cape.

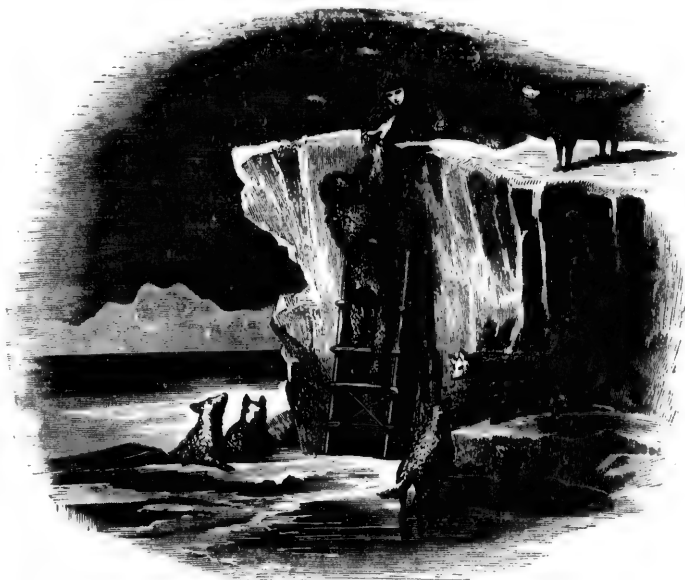
That night they succeeded in climbing on to the level by the foe-pieces, and walked around the turn of the cape for some distance, leaving their dogs behind. They found a good ice-foot, very wide, which extended as far as the cape. They saw a good

many birds on the water, both eider-ducks and dovekies, and the rocks on shore were full of sea-swallows. There was no ice. A fog coming on, they turned back to where the dogs had been left.

CHAPTER
XXIII.

A second
start.

They started again at 11.30 A.M. of the 21st. On reaching the land-ice they unloaded, and threw each package of provision from the floe up to the ice-foot, which was eight or nine feet above



MAKING THE LAND-ICE, (CLIMBING).

them. Morton then climbed up with the aid of the sledge, which they converted into a ladder for the occasion. He then pulled the dogs up by the lines fastened round their bodies, Hans lending a helping hand and then climbing up himself. They then drew up the sledge. The water was very deep, a stone the size of Morton's head taking twenty-eight seconds to reach the bottom, which was seen very clearly.

Pulling
the dogs
on the ice.

As they had noticed the night before, the ice-foot lost its good character on reaching the cape, becoming a mere narrow ledge hugging the cliffs, and looking as if it might crumble off altogether

CHAPTER
XXIII.

into the water at any moment. Morton was greatly afraid there would be no land-ice there at all when they came back. Hans and he thought they might pass on by climbing along the face of the crag ; in fact they tried a path about 50 feet high, but it grew so narrow that they saw they could not get the dogs past with their sledge-load of provisions. He therefore thought it safest to leave some food, that they might not starve on the return in case the ice-foot should disappear. He accordingly cached enough provision to last them back, with four days' dog-meat.

A cache.

At the pitch of the cape the ice-ledge was hardly three feet wide ; and they were obliged to unloose the dogs and drive them forward alone. Hans and he then tilted the sledge up, and succeeded in carrying it past the narrowest place. The ice-foot was firm under their tread, though it crumbled on the verge.

The tide
running
fast.

The tide was running very fast. The pieces of heaviest draught floated by nearly as fast as the ordinary walk of a man, and the surface pieces passed them much faster, at least four knots. On their examination the night before, the tide was from the north, running southward, carrying very little ice. The ice which was now moving so fast to northward seemed to be the broken land-ice around the cape, and the loose edge of the south ice. The thermometer in the water gave $+36^{\circ}$, 7° above the freezing-point of sea-water at Rensselaer Harbour.

Open
water.

They now yoked in the dogs, and set forward over the worst sort of mashed ice for three-quarters of a mile. After passing the cape, they looked ahead, and saw nothing but open water. The land to the westward seemed to overlap the land on which they stood, a long distance ahead : all the space between was open water. After turning the cape,—that which is marked on the chart as Cape Andrew Jackson,—they found a good smooth ice-foot in the entering curve of a bay, since named after the great financier of the American Revolution, Robert Morris. It was glassy ice, and the dogs ran on it full speed. Here the sledge made at least six miles an hour. It was the best day's travel they made on the journey.

After passing four bluffs at the bottom and sides of the bay, the land grew lower ; and presently a long low country opened on the land-ice, a wide plain between large headlands, with rolling hills through it. A flock of brent geese were coming down the valley

of this low land, and ducks were seen in crowds upon the open water. When they saw the geese first, they were apparently coming from the eastward; they made a curve out to seaward, and then, turning, flew far ahead over the plain, until they were lost to view, showing that their destination was inland. The general line of flight of the flock was to the north-east. Eiders and dovekies were also seen; and tern were very numerous, hundreds of them squealing and screeching in flocks. They were so tame that they came within a few yards of the party. Flying high overhead, their notes echoing from the rocks, were large white birds, which they took for burgomasters. Ivory gulls and mollemokes were seen further on. They did not lose sight of the birds after this, as far as they went. The ivory gulls flew very high, but the mollemokes alit, and fed on the water, flying over it well out to sea, as we had seen them do in Baffin's Bay. Separate from these flew a dingy bird unknown to Morton. Never had they seen the birds so numerous: the water was actually black with dovekies, and the rocks crowded.⁴⁸

CHAPTER
XXIII.
Flight of
the wild
geese,
eiders,
dovekies,
gulls, &c

The part of the channel they were now coasting was narrower, but as they proceeded it seemed to widen again. There was some ice arrested by a bend of the channel on the eastern shore; and, on reaching a low gravel point, they saw that a projection of land shut them in just ahead to the north. Upon this ice numerous seal were basking, both the netsik and ussuk.

Form of
the chan-
nel.

To the left of this, toward the West Land, the great channel (Kennedy Channel) of open water continued. There was broken ice floating in it, but with passages fifteen miles in width and perfectly clear. The end of the point—"Gravel Point," as Morton called it—was covered with hummocks and broken ice for about two miles from the water. This ice was worn and full of gravel. Six miles inland the point was flanked by mountains.

A little higher up they noticed that the pieces of ice in the middle of the channel were moving up, while the lumps near shore were floating down. The channel was completely broken up, and there would have been no difficulty in a frigate standing anywhere. The little brig, or "a fleet of her like," could have beat easily to the northward.

Movement
of the ice.

The wind blew strong from the north, and continued to do so for three days, sometimes blowing a gale, and very damp, the tops

CHAPTER
XXIII.Fogs and
mist.

of the hills becoming fixed with dark foggy clouds. The damp falling mist prevented their seeing any distance. Yet they saw no ice borne down from the northward during all this time; and, what was more curious, they found, on their return south, that no ice had been sent down during the gale. On the contrary, they then found the channel perfectly clear from shore to shore.

Shores of
the chan-
nel.

June 22, Thursday.—They camped at 8.30 A.M., on a ledge of low rock, having made in the day's journey forty-eight miles in a straight line. Morton thought they were at least forty miles up the channel. The ice was here moving to the southward with the tide. The channel runs northwardly, and is about thirty-five miles wide. The opposite coast appears straight, but still sloping, its head being a little to the west of north. This shore is high, with lofty mountains of sugar-loaf shape at the tops, which, set together in ranges, looked like piles of stacked cannon-balls. It was too cloudy for observations when they camped, but they obtained several higher up. The eider were in such numbers here that Hans fired into the flocks, and killed two birds with one shot.

Start at
midnight.

June 23, Friday.—In consequence of the gale of wind they did not start till 12.30 midnight. They made about eight miles, and were arrested by the broken ice of the shore. Their utmost efforts could not pass the sledge over this; so they tied the dogs to it, and went ahead to see how things looked. They found the land-ice growing worse and worse, until at last it ceased, and the water broke directly against the steep cliffs.

They continued their course overland until they came to the entrance of a bay, whence they could see a cape and an island to the northward. They then turned back, seeing numbers of birds on their way, and, leaving the dogs to await their return, prepared to proceed on foot.

Ear'y
flower-life.

This spot was the greenest that they had seen since leaving the headlands of the channel. Snow patched the valleys, and water was trickling from the rocks. Early as it was, Hans was able to recognise some of the flower-life. He ate of the young shoots of the lychnis, and brought home to me the dried pod (*siliqua*) of a hesperis, which had survived the wear and tear of winter. Morton was struck with the abundance of little stone-crops, "about the size of a pea."

June 23, 24, Friday, Saturday.—At 3 A.M. they started again, carrying eight pounds of pemmican and two of bread, besides the artificial horizon, sextant, and compass, a rifle, and the boat-hook. After two hours' walking the travel improved, and, on nearing a plain about nine miles from where they had left the sledge, they were rejoiced to see a she-bear and her cub. They had tied the dogs securely, as they thought; but Toodla and four others had broken loose and followed them, making their appearance within an hour. They were thus able to attack the bear at once.

Hans, who to the simplicity of an Esquimaux united the shrewd observation of a hunter, describes the contest which followed so graphically, that I try to engraft some of the quaintness of his description upon Mr. Morton's report. The bear fled; but the little one being unable either to keep ahead of the dogs or to keep pace with her, she turned back, and, putting her head under its haunches, threw it some distance ahead. The cub safe for the moment, she would wheel round and face the dogs, so as to give it a chance to run away; but it always stopped just as it alighted, till she came up and threw it ahead again: it seemed to expect her aid, and would not go on without it. Sometimes the mother would run a few yards ahead, as if to coax the young one up to her, and when the dogs came up she would turn on them and drive them back; then, as they dodged her blows, she would rejoin the cub and push it on, sometimes putting her head under it, sometimes catching it in her mouth by the nape of the neck.

For a time she managed her retreat with great celerity, leaving the two men far in the rear. They had engaged her on the land-ice; but she led the dogs in-shore, up a small stony valley which opened into the interior. But, after she had gone a mile and a half, her pace slackened, and, the little one being jaded, she soon came to a halt.

The men were then only half a mile behind; and, running at full speed, they soon came up to where the dogs were holding her at bay. The fight was now a desperate one. The mother never went more than two yards ahead, constantly looking at the cub. When the dogs came near her, she would sit upon her haunches and take the little one between her hind legs, fighting the dogs with her paws, and roaring so that she could have been heard a mile off. "Never," said Morton, "was an animal more distressed."

CHAPTER
XXIII.

A bear and
cub in
sight.

The re-
treat of
the bear.

The
mother
bear turns
on the
dogs.

CHAPTER
XXIII.

The mother bear fights desperately for her cub.

She would stretch her neck and snap at the nearest dog with her shining teeth, whirling her paws like the arms of a windmill. If she missed her aim, not daring to pursue one dog lest the others should harm the cub, she would give a great roar of baffled rage, and go on pawing, and snapping, and facing the ring, grinning at them with her mouth stretched wide.

The death of the mother.

When the men came up, the little one was perhaps rested, for it was able to turn round with her dam, no matter how quick she moved, so as to keep always in front of her belly. The five dogs were all the time frisking about her actively, tormenting her like so many gad-flies; indeed, they made it difficult to draw a bead on at her without killing them. But Hans, lying on his elbow, took a quiet aim and shot her through the head. She dropped and rolled over dead without moving a muscle.

The death of the cub.

The dogs sprang toward her at once; but the cub jumped upon her body and reared up, for the first time growling hoarsely. They seemed quite afraid of the little creature, she fought so actively and made so much noise; and, while tearing mouthfuls of hair from the dead mother, they would spring aside the minute the cub turned toward them. The men drove the dogs off for a time, but were obliged to shoot the cub at last, as she would not quit the body.

Hans fired into her head. It did not reach the brain, though it knocked her down; but she was still able to climb on her mother's body and try to defend it still, "her mouth bleeding like a gutter-spout." They were obliged to despatch her with stones.

Franklin and Crozier islands.

After skinning the old one they gashed its body, and the dogs fed upon it ravenously. The little one they cached for themselves on the return; and, with difficulty taking the dogs off, pushed on, crossing a small bay which extended from the level ground and had still some broken ice upon it. Hans was tired out, and was sent on shore to follow the curve of the bay, where the road was easier.

The ice over the shallow bay which Morton crossed was hummocked, with rents through it, making very hard travel. He walked on over this, and saw an opening not quite eight miles across, separating the two islands, which I have named after Sir John Franklin and his comrade Captain Crozier. He had seen them before from the entrance of the larger bay,—Lafayette Bay,

—but had taken them for a single island, the channel between them not being then in sight. As he neared the northern land, at the east shore which led to the cape (Cape Constitution), which terminated his labours, he found only a very small ice-foot, under the lee of the headland and crushed up against the side of the rock. He went on ; but the strip of land-ice broke more and more, until about a mile from the cape it terminated altogether, the waves breaking with a cross sea directly against the cape. The wind had moderated, but was still from the north, and the current ran up very fast, four or five knots perhaps.

CHAPTER
XXIII.
Cape Con-
stitution.

The cliffs were here very high : at a short distance they seemed about 2000 feet ; but the crags were so overhanging that Morton could not see the tops as he drew closer. The echoes were confusing, and the clamour of half a dozen ivory gulls, who were frightened from their sheltered nooks, was multiplied a hundred-fold. The mollemokes were still numerous ; but he now saw no ducks.

Height of
the cliffs

He tried to pass round the cape. It was in vain : there was no ice-foot ; and, trying his best to ascend the cliffs, he could get up but a few hundred feet. Here he fastened to his walking-pole the Grinnell flag of the *Antarctic*—a well-cherished little relic, which had now followed me on two Polar voyages. This flag had been saved from the wreck of the United States sloop-of-war *Peacock*, when she stranded off the Columbia River ; it had accompanied Commodore Wilkes in his far southern discovery of an Antarctic continent. It was now its strange destiny to float over the highest northern land, not only of America, but of our globe. Side by side with this were our Masonic emblems of the compass and the square. He let them fly for an hour and a half from the black cliff over the dark rock-shadowed waters, which rolled up and broke in white caps at its base.

The *Ant-
arctic* flag.

He was bitterly disappointed that he could not get round the cape, to see whether there was any land beyond ; but it was impossible. Rejoining Hans, they supped off their bread and pemmican, and, after a good nap, started on their return on Sunday, the 25th, at 1.30 P.M. From Thursday night, the 22d, up to Sunday at noon, the wind had been blowing steadily from the north, and for thirty-six hours of the time it blew a gale. But as he returned, he remarked that the more southern ice toward

A bitter
disap-
point-
ment

CHAPTER
XXIII.Floating
ice.

Kennedy Channel was less than it had been when he passed up. At the mouth of the channel it was more broken than when he saw it before, but the passage above was clear. About halfway between the furthest point which he reached and the channel, the few small lumps of ice which he observed floating—they were not more than half a dozen—were standing with the wind to the southward, while the shore current or tide was driving north.

His journal of Monday, 26th, says, "As far as I could see, the open passages were fifteen miles or more wide, with sometimes mashed ice separating them. But it is all small ice, and I think it either drives out to the open space to the north, or rots and sinks,* as I could see none ahead to the far north."⁴⁹

Direction
of the
coast.

The coast after passing the cape, he thought must trend to the eastward, as he could at no time when below it see any land beyond. But the west coast still opened to the north: he traced it for about fifty miles. The day was very clear, and he was able to follow the range of mountains which crowns it much further. They were very high, rounded at their summits, not peaked like those immediately abreast of him; though, as he remarked, this apparent change of their character might be referred to distance, for their undulations lost themselves like a wedge in the northern horizon.

Highest
station of
outlook.

His highest station of outlook at the point where his progress was arrested he supposed to be about 300 feet above the sea. From this point some 6° to the west of north, he remarked in the furthest distance a peak truncated at its top like the cliffs of Magdalena Bay. It was bare at its summit, but striated vertically with protruding ridges. Our united estimate assigned to it an elevation of from 2500 to 3000 feet. This peak, the most remote northern land known upon our globe, takes its name from the great pioneer of Arctic travel, Sir Edward Parry.

Mount
Parry.

The range with which it was connected was much higher, Mr. Morton thought, than any we had seen on the southern or Greenland side of the bay. The summits were generally rounded, resembling, to use his own expression, a succession of sugar-loaves and stacked cannon-balls declining slowly in the perspective. I have named these mountains after the name of the lady sovereign

* As I quote his own words, I do not think it advisable to comment upon his view. Ice never sinks in a liquid of the same density as that in which it formed.

under whose orders Sir John Franklin sailed, and the prince her consort. They are similar in their features to those of Spitzbergen; and, though I am aware how easy it is to be deceived in our judgment of distant heights, I am satisfied from the estimate of Mr. Morton, as well as from our measurements of the same range further to the south, that they equal them in elevation, 2500 feet.

CHAPTER
XXIII.

Victoria
and Albert
mountains.

Two large indentations broke in upon the uniform margin of the coast. Everywhere else the spinal ridge seemed unbroken. Mr. Morton saw no ice.

It will be seen by the abstract of our "field-notes" in the Appendix, as well as by an analysis of the results which I have here rendered nearly in the very words of Mr. Morton, that, after travelling due north over a solid sea choked with bergs and frozen fields, he was startled by the growing weakness of the ice: its surface became rotten, and the snow wet and pulpy. His dogs, seized with terror, refused to advance. Then for the first time the fact broke upon him, that a long dark band seen to the north beyond a protruding cape—Cape Andrew Jackson—was water. With danger and difficulty he retraced his steps, and, reaching sound ice, made good his landing on a new coast.

Resume of
Morton's
journal.

The journeys which I had made myself, and those of my different parties, had shown that an unbroken surface of ice covered the entire sea to the east, west, and south. From the southernmost ice, seen by Dr. Hayes only a few weeks before, to the region of this mysterious water, was, as the crow flies, 106 miles. But for the unusual sight of birds and the unmistakable giving way of the ice beneath them, they would not have believed in the evidence of eyesight. Neither Hans nor Morton was prepared for it.

Landing on the cape, and continuing their exploration, new phenomena broke upon them. They were on the shores of a channel, so open that a frigate, or a fleet of frigates, might have sailed up it. The ice, already broken and decayed, formed a sort of horse-shoe shaped beach, against which the waves broke in surf. As they travelled north, this channel expanded into an iceless area; "for four or five small pieces"—lumps—were all that could be seen over the entire surface of its white-capped waters. Viewed from the cliffs, and taking 36 miles as the mean radius open to reliable

Exploration
on the
shores of
the channel
of open
water.

CHAPTER survey, this sea had a justly-estimated extent of more than 4000 square miles.

Extent of open sea. Animal life, which had so long been a stranger to us to the south, now burst upon them. At Rensselaer Harbour, except the Netsik seal or a rarely encountered Harelda, we had no life available for the hunt. But here the Brent goose (*Anas bernicla*), the eider, and the king duck, were so crowded together that our Esquimaux killed two at a shot with a single rifle-ball.

The Brent
goose.

The Brent goose had not been seen before since entering Smith's Straits. It is well known to the Polar traveller as a migratory bird of the American continent. Like the others of the same family, it feeds upon vegetable matter, generally on marine plants with their adherent molluscous life. It is rarely or never seen in the interior, and from its habits may be regarded as singularly indicative of open water. The flocks of this bird, easily distinguished by their wedge-shaped line of flight, now crossed the water obliquely, and disappeared over the land to the north and east. I had shot these birds on the coast of Wellington Channel in latitude $74^{\circ} 50'$, nearly six degrees to the south : they were then flying in the same direction.

Sea swallows. The rocks on shore were crowded with sea-swallows (*Sterna Arctica*), birds whose habits require open water, and they were already breeding.

Marine
birds.

It may interest others besides the naturalist to state, that all of these occupied the southern limits of the channel for the first few miles after reaching open water, but, as the party continued their progress to the north, they disappeared, and marine birds took their place. The gulls were now represented by no less than four species. The Kittiwakes (*Larus tridactylis*)—reminding Morton of "old times in Baffin's Bay"—were again stealing fish from the water, probably the small whiting (*Merlangus Polariss*), and their grim cousins, enjoying the dinner thus provided at so little cost to themselves. It was a picture of life all round.

Flora.

Of the flora and its indications I can say but little ; still less can I feel justified in drawing from them any thermal inferences. The season was too early for a display of Arctic vegetation ; and, in the absence of specimens, I am unwilling to adopt the observations of Mr. Morton, who was no botanist. It seems clear, however, that many flowering plants, at least as developed as those of Rens-

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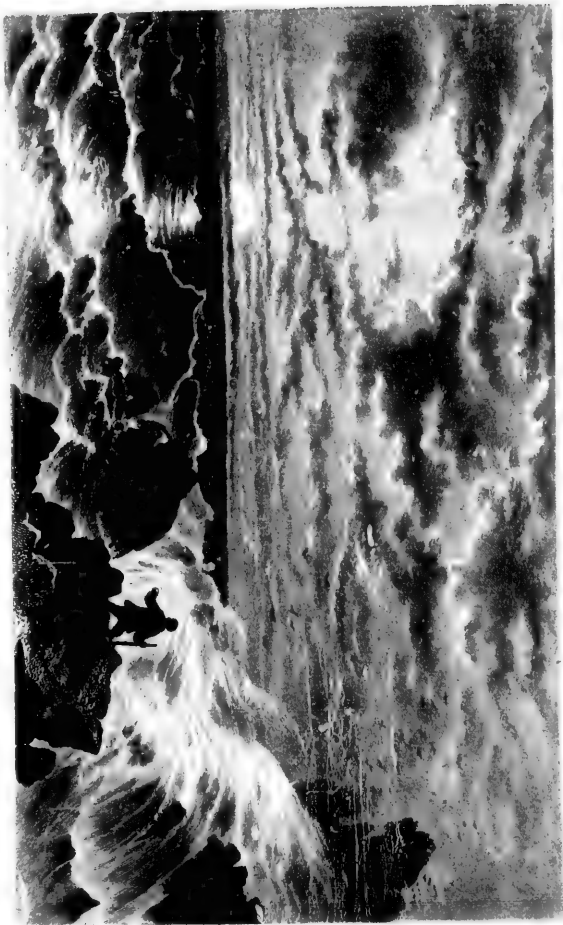
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THE OPEN WATER FROM CAPE JEFFERSON.

(From a sketch by J. F. Smith.)

PLATE 10



selaer Harbour, had already made themselves recognisable ; and, strange to say, the only specimen brought back was a crucifer (*Hesperis pygmaea*—Durand), the *siliquæ* of which, still containing seed, had thus survived the winter, to give evidence of its perfected growth. This plant I have traced to the Great Glacier, thus extending its range from the South Greenland zone. It has not, I believe, been described at Upernavik.⁹⁰

It is another remarkable fact, that as they continued their journey, the land-ice and snow, which had served as a sort of pathway for their dogs, crumbled and melted, and at last ceased altogether ; so that, during the final stages of their progress, the sledge was rendered useless, and Morton found himself at last toiling over rocks and along the beach of a sea, which like the familiar waters of the south, dashed in waves at his feet.

Here for the first time he noticed the Arctic Petrel (*Procellaria glacialis*), a fact which shows the accuracy of his observation, though he was then unaware of its importance. This bird had not been met with since we left the North Water of the English whalers, more than two hundred miles south of the position on which he stood. Its food is essentially marine, the *acalephæ*, &c. &c. ; and it is seldom seen in numbers, except in the highways of open water frequented by the whale and the larger representatives of ocean life. They were in numbers flitting and hovering over the crests of the waves, like their relatives of kinder climates, the Cape of Good Hope Pigeons, Mother Carey's Chickens, and the petrels everywhere else.

As Morton, leaving Hans and his dogs, passed between Sir John Franklin Island and the narrow beach-line, the coast became more wall-like, and dark masses of porphyritic rock abutted into the sea. With growing difficulty he managed to climb from rock to rock, in hopes of doubling the promontory and sighting the coasts beyond, but the water kept encroaching more and more on his track.

It must have been an imposing sight, as he stood at this termination of his journey, looking out upon the great waste of waters before him. Not a "speck of ice," to use his own words, could be seen. There, from a height of 480 feet, which commanded a horizon of almost forty miles, his ears were gladdened with the novel music of dashing waves ; and a surf, breaking in among the rocks at his feet, stayed his further progress.

CHAPTER
XXIII.Hesperis
pygmaea.The Arctic
Petrel.Morton
and Hans
separate.The termi-
nation of
Morton's
journey.

CHAPTER
XXIII.Cape Con-
stitution.Conjec-
tures
about an
open sea
near the
Pole.

Beyond this cape all is surmise. The high ridges to the north-west dwindled off into low blue knobs, which blended finally with the air. Morton called the cape, which baffled his labours, after his commander; but I have given it the more enduring name of

Cape Constitution.

The homeward journey, as it was devoted to the completion of his survey and developed no new facts, I need not give. But I am reluctant to close my notice of this discovery of an open sea, without adding that the details of Mr. Morton's narrative harmonized with the observations of all our party. I do not propose to discuss here the causes or conditions of this phenomenon. How far it may extend,—whether it exists simply as a feature of the immediate region, or as part of a great and unexplored area communicating with a Polar basin,—and what may be the argument in favour of one or the other hypothesis, or the explanation which reconciles it with established laws,—may be questions for men skilled in scientific deductions. Mine has been the more humble duty of recording what we saw. Coming as it did, a mysterious fluidity in the midst of vast plains of solid ice, it was well calculated to arouse emotions of the highest order; and I do not believe there was a man among us who did not long for the means of embarking upon its bright and lonely waters. But he who may be content to follow our story for the next few months will feel, as we did, that a controlling necessity made the desire a fruitless one.

An open sea near the Pole, or even an open Polar basin, has been a topic of theory for a long time, and has been shadowed forth to some extent by actual or supposed discoveries. As far back as the days of Barentz, in 1596, without referring to the earlier and more uncertain chronicles, water was seen to the eastward of the northernmost cape of Novaia Zemlia; and, until its limited extent was defined by direct observation, it was assumed to be the sea itself. The Dutch fisherman above and around Spitzbergen pushed their adventurous cruises through the ice into open spaces varying in size and form with the season and the winds; and Dr. Scoresby, a venerated authority, alludes to such vacancies in the floe as pointing in argument to a freedom of movement from the north, inducing open water in the neighbourhood of the Pole. Baron Wrangell, when forty miles from the coast of Arctic Asia, saw, as he thought, a "vast, illimitable ocean," forgetting for the moment

how narrow are the limits of human vision on a sphere. So, still more recently, Captain Penny proclaimed a sea in Wellington Sound, on the very spot where Sir Edward Belcher has since left his frozen ships; and my predecessor, Captain Inglefield, from the mast-head of his little vessel, announced an "open Polar basin," but fifteen miles off from the ice which arrested our progress the next year.

CHAPTER
XXIII.
Conjectures of
different
voyagers.

All these illusory discoveries were no doubt chronicled with perfect integrity; and it may seem to others, as since I have left the field it sometimes does to myself, that my own, though on a larger scale, may one day pass within the same category. Unlike the others, however, that which I have ventured to call an open sea has been travelled for many miles along its coast, and was viewed from an elevation of 580 feet, still without a limit, moved by a heavy swell, free of ice, and dashing in surf against a rock-bound shore.

It is impossible, in reviewing the facts which connect themselves with this discovery,—the melted snow upon the rocks, the crowds of marine birds, the limited, but still advancing vegetable life, the rise of the thermometer in the water,—not to be struck with their bearing on the question of a milder climate near the Pole. To refer them all to the modification of temperature induced by the proximity of open water is only to change the form of the question; for it leaves the inquiry unsatisfied—What is the cause of the open water?

Theory of
a milder
climate
near the
Pole.

This, however, is not the place to enter upon such a discussion. There is no doubt on my mind, that at a time within historical and even recent limits, the climate of this region was milder than it is now. I might base this opinion on the fact, abundantly developed by our expedition, of a secular elevation of the coast line. But, independently of the ancient beaches and terraces, and other geological marks which show that the shore has risen, the stone huts of the natives are found scattered along the line of the bay in spots now so fenced in by ice as to preclude all possibility of the hunt, and, of course, of habitation by men who rely on it for subsistence.⁵¹

Tradition points to these as once favourite hunting-grounds near open water. At Rensselaer Harbour, called by the natives *Aunatok*, or the Thawing-Place, we met with huts in quite tolerable preservation, with the stone pedestals still standing which used to sustain

Favourite
hunting
grounds.

CHAPTER
XXIII.Climatic
changes.Possible
deflection
of the Gulf
Stream.

the carcasses of the captured seals and walrus. Sunny Gorge, and a large indentation in Dallas Bay, w' ich bears the Esquimaux name of the Inhabited Place, showed us the remains of a village, surrounded by the bones of seals, walrus, and whales—all now cased in ice. In impressive connection with the same facts, showing not only the former extension of the Esquimaux race to the higher north, but the climatic changes which may perhaps be still in progress there, is the sledge-runner which Mr. Morton saw on the shores of Morris Bay, in latitude 81° . It was made of the bone of a whale, and worked out with skilful labour.⁵²

In this recapitulation of facts, I am not entering upon the question of a warmer climate impressed upon this region in virtue of a physical law which extends the isotherms toward the Pole. Still less am I disposed to express an opinion as to the influence which ocean-currents may exert on the temperature of these far-northern regions; there is at least one man, an officer in the same service with myself, and whose scientific investigations do it honour, with whom I am content to leave that discussion. But I would respectfully suggest to those whose opportunities facilitate the inquiry, whether it may not be that the Gulf Stream, traced already to the coast of Novaia Zemlia, is deflected by that peninsula into the space around the Pole. It would require a change in the mean summer temperature of only a few degrees to develop the periodical recurrence of open water. The conditions which define the line of perpetual snow and the limits of the glacier formation may have certainly a proximate application to the problem of such water-spaces near the Pole.⁵³



CHAPTER XXIV.

PROSPECTS—SPECULATIONS—THE ARGUMENT—THE CONCLUSION—THE RE-
CONNOISSANCE — THE SCHEME—EQUIPMENT OF BOAT PARTY—ELDER
ISLAND — HANS ISLAND — THE CORMORANT GULL—SENTIMENT—OUR
CHARTS—CAPTAIN INGLEDEN—DISCREPANCIES—A GALE—FAST TO A
FLOE.

ATTEMPT TO REACH BEECHY ISLAND.

ALL the sledge-parties were now once more aboard ship, and the season of Arctic travel had ended. For more than two months we had been imprisoned in ice, and throughout all that period, except during the enforced holiday of the midwinter darkness, or while repairing from actual disaster, had been constantly in the field. The summer was wearing on, but still the ice did not break up as it should. As far as we could see, it remained inflexibly solid between us and the North Water of Baffin's Bay. The questions and speculations of those around me began to show that they too had anxious thoughts for the coming year. There was reason for all our apprehensions, as some of my notes may show.

"*July 8, Saturday.*—Penny saw water to the southward in Barrow's Straits as early as June; and by the first of July the leads were within a mile of his harbour in Wellington Channel. Dr. Sutherland says he could have cut his way out by the 15th. Austin was not liberated till the 10th of August; but the water had worked up to within three miles and a half of him as early as the 1st, having advanced twenty miles in the preceding month. If, now, we might assume that the ice between us and the nearest water would give way as rapidly as it did in these two cases,—an assumption, by-the-way, which the difference of the localities is all against, the mouth of our harbour should be reached in fifty days, or by the last day of August; and after that, several days, or perhaps weeks must go by before the inside ice yields around our brig.

"I know by experience how soon the ice breaks up after it once begins to go, and I hardly think that it can continue advancing so slowly much longer. Indeed, I look for it to open, if it opens

CHAPTER
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Imprisoned again in the ice.

Speculations about the breaking up of the ice.

CHAPTER
XXIVFears
about
passing
through
the ice.

at all, about the beginning of September at furthest, somewhere near the date of Sir James Ross's liberation at Leopold. But then, I have to remember that I am much further to the north than my predecessors, and that by the 28th of last August I had already, after twenty days of unremitting labour, forced the brig nearly forty miles through the pack, and that the pack began to close on us only six days later, and that on the 7th of September we were fairly frozen in. Yet last summer was a most favourable one for ice-melting. Putting all this together, it looks as if the winter must catch us before we can get halfway through the pack, even though we should begin warping to the south at the earliest moment that we can hope for water.

Despon-
dency.

"It is not a pleasant conclusion of the argument ; for there never was, and I trust never will be, a party worse armed for the encounter of a second Arctic winter. We have neither health, fuel, nor provisions. Dr. Hayes, and indeed all I have consulted about it indirectly, despond at the thought ; and when I look round upon our diseased and disabled men, and think of the fearful work of the last long night, I am tempted to feel as they do.

Diffi-
culties.

"The alternative of abandoning the vessel at this early stage of our absence, even were it possible, would, I feel, be dishonouring ; but, revolving the question as one of practicability alone, I would not undertake it. In the first place, how are we to get along with our sick and newly-amputated men ? It is a dreary distance at the best to Upernavik or Beechy Island, our only seats of refuge, and a precarious traverse if we were all of us fit for moving ; but we are hardly one-half in efficiency of what we count in number. Besides, how can I desert the brig while there is still a chance of saving her ? There is no use of noting *pros* and *cons* : my mind is made up ; I will not do it.

The deci-
sion.

"But I must examine this ice-field for myself. I have been maturing through the last fortnight a scheme of relief, based upon a communication with the English squadron to the south, and tomorrow I set out to reconnoitre. Hans will go with me. We will fit out our poor travel-worn dogs with canvas shoes, and cross the flocs to the true water edge, or at least be satisfied that it is impossible. 'He sees best who uses his own eyes.' After that I have my course resolved on.

July 11, Tuesday.—We got back last night : a sixty miles' jour-

ney,—comfortless enough, with only three hours' sleep on the ice. For thirty-five miles south the straits are absolutely tight. Off Refuge Inlet and Esquimaux Point we found driving leads; but between these points and the brig not a crack. I pushed the dogs over the drift-ice, and, after a fair number of mischances, found the North Water. It was flowing and free; but since M'Gary saw it last May it has not advanced more than four miles. It would be absurd at this season of the year to attempt escaping in open boats with this ice between us and water. All that can be done is to re-inforce our energies as we may, and look the worst in the face.

CHAPTER
XXIV.
Results of
the jour-
ney.

"In view of these contingencies, I have determined to attempt in person to communicate with Beechy Island, or at least make the effort. If I can reach Sir Edward Belcher's squadron, I am sure of all I want. I will take a light whaleboat, and pick my companions for a journey to the south and west. I may find perhaps the stores of the *North Star* at the Wostenholm Islands, or by great good luck come across some passing vessel of the squadron, and make known our whereabouts and wants; or, failing these, we will try and coast it along to Wellington Channel.

Resolution
to attempt
another
expedi-
tion.

"A depôt of provisions and a seaworthy craft large enough to carry us,—if I had these, everything would be right. Even Sir John Ross's launch, the *Little Mary*, that he left at Union Bay, would serve our purpose. If I had her I could make a southern passage after the fall tides. The great enemy of that season is the young shore-ice, that would cut through our frail boats like a saw. Or, if we can only renew our stock of provisions for the winter, we may await the chances of next year.

"I know it is a hazardous venture, but it is a necessary one, and under the circumstances an incumbent duty. I should have been glad, for some reasons, if the command of such an attempt could have been delegated to a subordinate; but I feel that I have no right to devolve this risk upon another, and I am, besides, the only one possessed of the necessary local knowledge of Lancaster Sound and its ice-movements.

"As a prelude to this solemn undertaking, I met my officers in the evening, and showed them my ice-charts; explaining, what I found needed little explanation, the prospect immediately before us. I then discussed the probable changes, and, giving them my personal opinion that the brig might after all be liberated at a

Prelude to
the under-
taking.

CHAPTER
XXIV.Announce-
ment of
the pro-
ject.

late date, I announced my project. I will not say how gratified I was with the manner in which they received it. It struck me that there was a sense of personal relief experienced everywhere. I told them that I did not choose to call a council or connect any of them with the responsibilities of the measure, for it involved only the personal safety of those who chose to share the risk. Full instructions were then left for their guidance during my absence.

Volun-
teers.

"It was the pleasantest interview I ever had with my associates. I believe every man on board would have volunteered, but I confined myself to five active men: James M'Gary, William Morton, George Riley, Hans Christian, and Thomas Hickey, made up my party."

The For-
lorn Hope.

Our equipment had been getting ready for some time, though without its object being understood or announced. The boat was our old *Forlorn Hope*, mended up and revised for her new destinies. She was 23 feet long, had $6\frac{1}{2}$ feet beam, and was 2 feet 6 inches deep. Her build was the characteristic one of the American whaleboats, too flat-bottomed for ordinary use, but much improved by a false keel, which Ohlsen had given her throughout her entire length. After all, she was a mere cockle-shell.

Her great fault was her knife-like bow, which cut into the short seas most cruelly. To remedy this in some degree, and to make up for her want of height, I devised a sort of half-deck of canvas and gum-elastic cloth, extending back beyond the fore-mast, and continued along the gunwale,—a sort of weather-cloth, which might possibly add to her safety, and would certainly make her more comfortable in heavy weather.

Her rig.

I left her rig altogether to M'Gary. She carried what any one but a New London whaler would call an inordinate spread of canvas, a light cotton fore-sail of 12 feet lift, a stouter main-sail of 14 feet lift with a spreet 18 feet long, and a snug little jib. Her masts were of course selected very carefully, for we could not carry extra sticks: and we trusted to the good old-fashioned steering-oar rather than a rudder.

Her
stores.

Morton, who was in my confidence from the first, had all our stores ready. We had no game, and no meat but pork, of which we took some hundred and fifty pounds. I wanted pemmican, and sent the men out in search of the cases which were left on the floe by the frozen depôt-party during the rescue of last March; but

they could not find a trace of them, or indeed of anything else we abandoned at that time—a proof, if we wanted one, how blurred all our faculties must have been by suffering, for we marked them, as we thought, with marvellous care.

We lifted our boat over the side in the afternoon, and floated her to the crack at the Observatory Island; mounted her there on our large sledge *The Faith*, by an arrangement of cradles of Mr. Ohlsen's devising; stowed in everything but the provisions, and carried her on to the bluff of Sylvia Headland—and the next morning a party consisting of all but the sick was detailed to transport her to open water; while M'Gary, Hans, and myself, followed with our *St. John's* sledge, carrying our stores.

The boat
mounted
on a
sledge.

The surface of the ice was very irregular and covered with water-pools. Our sledge broke down with repeated strainings, and we had a fatiguing walk of thirty-six miles to get another. We passed the first night wet and supperless on the rocks—a bad beginning, for the next day found us stiff and out of sorts.

The ice continued troublesome, the land-ices swaying hither and thither with the tide. The second day's progress, little as it was, cost us very hard labour. But another night of repose on the rocks refreshed us; so that, the day after, we were able to make about seven miles along the ice-belt. Two days more, and we had carried the boat across twenty miles of heavy ice-floe, and launched her in open water. It was not far from the hut on Esquimaux Point.

The ice
continues
trouble-
some.

The straits were much clogged with drift, but I followed the coast southward without difficulty. We travelled at night, resting when the sun was hottest. I had every reason to be pleased with the performance of the whaleboat, and the men kept up their spirits well. We landed at the point where we left our life-boat a year ago, and to our great joy found it untouched: the cove and inlet were still fast in ice.

We now neared the Littleton Island of Captain Inglefield, where a piece of good fortune awaited us. We saw a number of ducks, both eiders and heralds; and it occurred to me that by tracking their flight we should reach their breeding-grounds. There was no trouble in doing so, for they flew in a bee-line to a group of rocky islets, above which the whole horizon was studded with birds. A rugged little ledge, which I named Eider Island, was so

Littleton
Island.

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thickly colonized that we could hardly walk without treading on a nest. We killed with guns and stones over two hundred birds in a few hours.

The breeding season.

It was near the close of the breeding-season. The nests were still occupied by the mother-birds, but many of the young had burst the shell, and were nestling under the wing, or taking their first lessons in the water-pools. Some, more advanced, were already in the ice-sheltered channels, greedily waiting for the shell-fish and sea-urchins, which the old bird busied herself in procuring for them.

Hans Island and its inhabitants.

Near by was a low and isolated rock-ledge, which we called Hans Island. The glaucous gulls, those cormorants of the Arctic seas, had made it their peculiar homestead. Their progeny, already full-fledged and voracious, crowded the guano-whitened rocks; and the mothers, with long necks and gaping yellow bills, swooped above the peaceful shallows of the eiders, carrying off the young birds, seemingly just as their wants required. A more domineering and insatiable rapacity I have never witnessed. The gull would gobble up and swallow a young eider in less time than it takes me to describe the act. For a moment you would see the paddling feet of the poor little wretch protruding from the mouth; then came a distension of the neck as it descended into the stomach; a few moments more, and the young gulls were feeding on the ejected morsel.

The mother-duck, of course nearly distracted, battles, and battles well; but she cannot always re-assemble her brood; and in her efforts to defend one, uncovering the others, I have seen her left as destitute as Niobe. Hans tells me that in such cases she adopts a new progeny; and, as he is well versed in the habits of the bird, I see no reason to doubt his assertion.

The glaucous is not the only predatory gull of Smith's Strait. In fact, all the Arctic species, without including their cousins the jagers, have the propensity strongly marked. I have seen the ivory gull, the most beautiful and snowy St. Agnes of the ice-fields, seize our wounded awks, and, after a sharp battle, carry them off in her talons. A novel use of a palmated foot.

I could sentimentalize on these bereavements of the ducks and their companions in diet: it would be only the everyday sermonizing of the world. But while the gulls were fattening their

young on the eiders, the eiders were fattening theirs on the lesser life of the sea, and we were as busily engaged upon both in true predatory sympathy. The squab-gull of Hans Island has a well-earned reputation in South Greenland for its delicious juices, and the eggs of Eider Island can well afford to suffer from the occasional visits of gulls and other bipeds; for a locust-swarm of foragers might fatten without stint on their surplus abundance.

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Gulls and
eiders.

We camped at this nursery of wild-fowl, and laid in four large India-rubber bags full, cleaned and rudely boned. Our boat was hauled up and refitted; and, the trial having shown us that she was too heavily laden for safety, I made a general reduction of our stores, and cached the surplus under the rocks.

On Wednesday, the 19th, we left Flagstaff Point, where we fixed our beacon last year; and stood west 10° south under full canvas. My aim was to take the channel obliquely at Littleton Island; and, making the drift-ice or the land to the south-west in the neighbourhood of Cape Combermere, push on for Kent Island and leave a cairn there.

I had the good fortune to get satisfactory meridian observations, as well as angular bearings between Cape Alexander and Flagstaff Point, and found, as our operations by theodolite had already indicated, that the entire coast-line upon the Admiralty charts of my predecessor would have to be altered.

Meridian
observa-
tions.

Cape Isabella, the western headland of the strait, whose discovery, by-the-way, is due rather to old Baffin than his follower, Sir John Ross, bears west 22° north (solar) from Cape Alexander; its former location being some 20° to the south of west. The narrowest part of Smith's Straits is not, as has been considered, between these two capes, but upon the parallel of $78^{\circ} 24'$, where Cape Isabella bears due west of Littleton Island, and the diameter of the channel is reduced to thirty-seven miles.

Situation
of Cape
Isabella.

The difference between our projection of this coast and Captain Inglefield's, refers itself naturally to the differing circumstances under which the two were framed. The sluggishness of the compass, and the eccentricities of refraction in the Arctic seas, are well fitted to embarrass and mislead a navigator. I might hesitate to assert the greater certainty for our results, had not the position of our observatory at Fern Rock, to which our survey is referred, been determined by a careful series of astronomical observations.⁵⁴

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Captain Inglesfeld gives the mean trend of the east coast about 20° too much to the north, in consequence of which the capes and indentations sighted by him are too high in latitude.

Cape Frederick VII.

Cape Frederick VII., his highest northern point, is placed in lat. $79^{\circ} 30'$, while no land—the glacier not being considered as such—is found on that coast beyond $79^{\circ} 13'$. The same cape, as laid down in the Admiralty Chart of 1852, is about eighty miles from the furthest position reached by Captain Inglesfeld. To see land upon the horizon at this distance, even from a mast-head 80 feet high, would require it to be a mountain whose altitude exceeded 3500 feet. An island similar in position to that designated by Captain Inglesfeld as Louis Napoleon does not exist. The land sighted in that direction may have been the top of a high mountain on the north side of Franklin Pierce Bay, though this supposition requires us to assume an error in the bearing; for, as given in the chart, no land could be within the range of sight. In deference to Captain Inglesfeld, I have continued for this promontory the name which he had impressed upon it as an island.

Boat navigation in the open sea.

Toward night the wind freshened from the northward, and we passed beyond the protection of the straits into the open sea-way. My journal gives no picture of the life we now entered on. The oldest sailor, who treads the deck of his ship with the familiar confidence of a man at home, has a distrust of open-boat navigation which a landsman hardly shares. The feeling grew upon us as we lost the land. M'Gary was an old Behring's Straits whaler, and there is no better boatman in the world than he; but I know that he shared my doubts, as the boat buried herself again and again in the trough of a short chopping sea, which it taxed all his dexterity in steering to meet.

Baffin passed around this gulf in 1616 with two small vessels; but they were giants beside ours. I thought of them as we crossed his track steering for Cape Combermere, then about sixty miles distant, with every prospect of a heavy gale.

We were in the centre of this large area of open water when the gale broke upon us from the north. We were near foundering. Our false bow of India-rubber cloth was beaten in, and our frail weather-boarding soon followed it. With the utmost exertion we could hardly keep our boat from broaching to: a broken oar or an

accidental twitch would have been fatal to us at any time. CHAPTER
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But M'Gary handled that whaler's marvel, the long steering-oar, with admirable skill. None of us could pretend to take his place. For twenty-two unbroken hours he stuck to his post without relaxing his attention or his efforts.

I was not prepared for such a storm. I do not think I have A storm. seen a worse sea raised by the northerers of the Gulf of Mexico. At last the wind hauled to the eastward, and we were glad to drive before it for the in-shore floes. We had passed several bergs; but the sea dashed against their sides so furiously as to negative all hope of protection at their base; the pack or floe, so much feared before, was now looked to for a refuge.

I remember well our anxiety as we entered the loose streams of Fast to a
floe. drift after four hours' scudding, and our relief when we felt their influence upon the sea. We fastened to an old floe, not 50 yards in diameter, and, with the weather-surf breaking over our heads, rode out the storm under a warp and grapnel.

CHAPTER XXV.

WORKING ON—A BOAT NIP—ICE-BARRIER—THE BARRIER PACK—PROGRESS
HOPELESS—NORTHUMBERLAND ISLAND—NORTHUMBERLAND GLACIER—
ICE-CASCADES—NEVE.

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Boring
into the
ice-pack.

THE obstacle we had now to encounter was the pack that stretched between us and the south.

When the storm abated we commenced boring into it,—slow work at the best of times ; but my companions encountered it with a persevering activity quite as admirable as their fortitude in danger. It had its own hazards too ; and more than once it looked as if we were permanently beset. I myself knew that we might rely on the southerly wind to liberate us from such an imprisonment ; but I saw that the men thought otherwise, as the ice-fields closed around us and the horizon showed an unchanging circle of ice.

The sun
appears.

We were still labouring on, hardly past the middle of the bay, when the flocs began to relax. On Sunday, the 23d of July, the whole aspect around us changed. The sun came out cheerily, the leads opened more and more, and, as we pulled through them to the south, each ice-tongue that we doubled brought us nearer to the Greenland shore. A slackening of the ice to the east enabled us after a while to lay our course for Hakluyt Island. We spread our canvas again, and reached the in-shore fields by one in the afternoon. We made our camp, dried our buffalo-skins, and sunned and slept away our fatigue.

Working
on.

We renewed our labours in the morning. Keeping inside the pack, we coasted along for the Cary Islands, encountering now and then a projecting floe, and either boring or passing around it, but making a satisfactory progress on the whole toward Lancaster Sound. But at the south point of Northumberland Island the pack arrested us once more. The seam by which we had come east lay between Whale Sound and Murchison Inlet, and the ice-drift from the southern of these had now piled itself in our way.

I was confident that I should find the "Eastern Water" if I could only reach Cape Parry, and that this would give me a free track to Cary Islands. I therefore looked anxiously for a fissure in the pack, and pressed our little craft into the first one that seemed at all practicable.

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For the next three days we worked painfully through the half-open leads, making in all some fifteen miles to the south. We had very seldom room enough to row; but, as we tracked along, it was not difficult to escape nippings, by hauling up the boat on the ice. Still she received some hard knocks, and a twist or two that did not help her sea-worthiness, for she began to leak; and this, with the rain which fell heavily, forced us to bale her out every other hour. Of course we could not sleep, and one of our little party fell sick with the unmitigated fatigue.

Painful
work.

On the 29th it came on to blow, the wind still keeping from a south-west, but cold and almost rising to a gale. We had had another wet and sleepless night, for the floes still baffled us by their capricious movements. But at three in the afternoon we had the sun again, and the ice opened just enough to tempt us. It was uncomfortable toil. We pushed forward our little weather-worn craft, her gunwales touching on both sides, till the toppling ice began to break down on us, and sometimes, critically suspended, met above our heads.

A gale.

One of these passages I am sure we all of us remember. We were in an alley of pounded ice-masses, such as the receding floes leave when they have crushed the tables that were between them, and had pushed our way far enough to make retreat impossible, when the fields began to close in. There was no escaping a nip, for everything was loose and rolling around us, and the floes broke into hummock bridges as they came together. They met just ahead of us, and gradually swayed in toward our boat. The fragments were already splitting off and spinning over us, when we found ourselves borne up by the accumulating rubbish, like the *Advance* in her winter drift; and, after resting for twenty minutes high out of water, quietly lowered again as the fields relaxed their pressure.

A boat
nip.

Generally, however, the ice-fields came together directly, and so gradually as to enable us to anticipate their contact. In such cases, as we were short-handed and our boat heavily laden, we

CHAPTER
XXV.Plan of
getting
through
the ice.

were glad to avail ourselves of the motion of the floes to assist in lifting her upon them. We threw her across the lead by a small pull of the steering-oar, and let her meet the approaching ice upon her bow. The effect, as we found in every instance, was to press her down forward as the floe advanced against her, and to raise her stern above the level of the other field. We held ourselves ready for the spring as she began to rise.

It was a time of almost unbroken excitement; yet I am not surprised, as I turn over the notes of my meagre diary, to find how little of stirring incident it records. The story of one day's strife with the ice-floes might almost serve for those which followed it; I remember that we were four times nipped before we succeeded in releasing ourselves, and that we were glad to haul upon the floes as often as a dozen times. We attempted to drag forward on the occasional fields; but we had to give it up, for it strained the boat so much that she was barely sea-worthy; it kept one man busy the last six days baling her out.

An ice
barrier.

On the 31st, at the distance of ten miles from Cape Parry, we came to a dead halt. A solid mass lay directly across our path, extending onward to our furthest horizon. There were bergs in sight to the westward, and by walking for some four miles over the moving floe in that direction, McGary and myself succeeded in reaching one. We climbed it to the height of a hundred and twenty feet, and, looking out from it with my excellent spy-glass to the south and west, we saw that all within a radius of thirty miles was a motionless, unbroken, and impenetrable sea.

I had not counted on this. Captain Inglefield found open water two years before at this very point. I myself met no ice here only seven days later in 1853. Yet it was plain, that from Cape Combermere on the west side, and an unnamed bay immediately to the north of it, across to Hackluyt Island, there extended a continuous barrier of ice. We had scarcely penetrated beyond its margin.

The divid-
ing pack
of Baffin's
Bay.

We had, in fact, reached the dividing pack of the two great open waters of Baffin's Bay. The experience of the whalers and of the expedition-ships that have traversed this region have made all of us familiar with that great expanse of open sea, to the north of Cape Dudley Diggs, which has received the name of the North Water. Combining the observations of Baffin, Ross, and Ingle-

field, we know that this sometimes extends as far north as Littleton Island, embracing an area of 90,000 square miles. The voyagers I have named could not, of course, be aware of the interesting fact that this water is divided, at least occasionally, into two distinct bodies; the one comprehended between Lancaster and Jones's Sounds, the other extending from the point we had now reached to the upper pack of Smith's Straits. But it was evident to all of our party that the barrier which now arrested us was made up of the ices which Jones's Sound on the west and Murchison's on the east had discharged and driven together.

I may mention, as bearing on the physical geography of the region, that south of Cape Isabella the western shore is invested by a zone of unbroken ice. We encountered it when we were about twenty miles from the land. It followed the curves of three great indentations, whose bases were lined with glaciers rivalling those of Melville Bay. The bergs from them were numerous and large, entangling the floating floes, and contributing as much as the currents to the ice-clad character of this most dreary coast. The currents alone would not explain it. Yet when we recur to the observations of Graah, who describes a similar belt on the eastern coast of Greenland, and to the observations of the same character that have been made on the coasts of Arctic America to the south-east, it is not easy to escape the thought, that this accumulation of ice on the western shores must be due, in part at least, to the rotary movements of the earth, whose increasing radius as we recede from the Pole gives increased velocity to the southern ice-pack.

To return to our narrative. It was obvious that a further attempt to penetrate to the south must be hopeless till the ice-barrier before us should undergo a change. I had observed, when passing Northumberland Island, that some of its glacier-slopes were margined with verdure, an almost unfailing indication of animal life; and, as my men were much wasted with diarrhoea, and our supplies of food had become scanty, I resolved to work my way to the island, and recruit there for another effort.

Tracking and sometimes rowing through a heavy rain, we traversed the leads for two days, working eastward; and on the morning of the third gained the open water near the shore. Here a breeze came to our aid, and in a couple of hours more we passed

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The division of the open water.

A zone of unbroken ice.

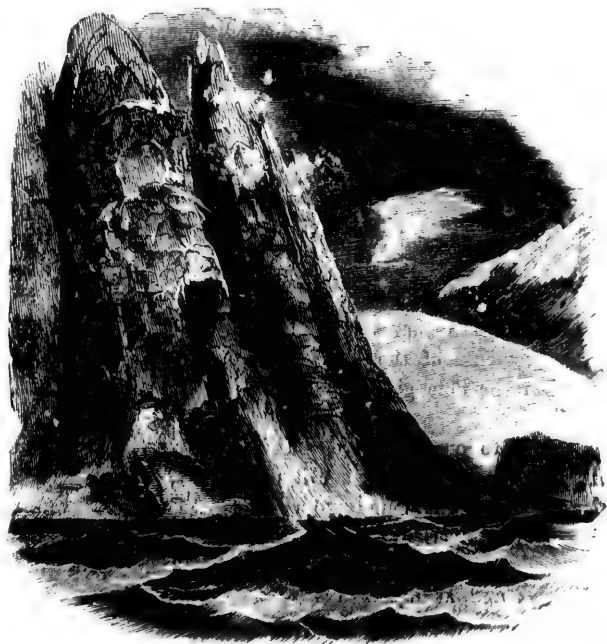
Further progress hopeless.

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XXV.

with now unwonted facility to the southern face of the island. We met several flocks of little auks as we approached it, and found on landing that it was one enormous homestead of the auks, dovebies, and gulls.

Traces of
an Esqui-
maux
settle-
ment.

We encamped on the 31st, on a low beach at the foot of a moraine that came down between precipitous cliffs of surpassing wildness. It had evidently been selected by the Esquimaux for a winter settlement : five well-built huts of stone attested this. Three of them were still tolerably perfect, and bore marks of recent habitation. The droppings of the birds had fertilized the soil, and it abounded in grasses, sorrel, and cochlearia, to the water's edge.



GLACIER OF NORTHUMBERLAND ISLAND.

Foxes.

The foxes were about in great numbers, attracted, of course, by the abundance of birds. They were all of them of the lead-coloured variety, without a white one among them. The young ones, as

yet lean and seemingly unskilled in hospitable courtesies, barked at us as we walked about.

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I was greatly interested by a glacier that occupied the head of the moraine. It came down abruptly from the central plateau of the island, with an angle of descent of more than 70° . I have never seen one that illustrated more beautifully the viscous or semi-solid movement of these masses. Like a well-known glacier of the Alps, it had two planes of descent; the upper nearly precipitous for about 400 feet from the summit, the lower of about the same height, but with an angle of some 50° ,—the two communicating by a slightly-inclined platform perhaps half a mile long. This ice was unbroken through its entire extent. It came down from the level of the upper country, a vast icicle, with the folds or waves impressed upon it by its onward motion, undisturbed by any apparent fracture or crevasse. Thus it rolled onward over the rugged and contracting platform below, and thence poured its semi-solid mass down upon the plain. Where it encountered occasional knobs of rock it passed round them, bearing still the distinctive marks of an imperfect fluid obstructed in its descent; and its lower fall described a dome, or, to use the more accurate simile of Forbes, a great outspread clam-shell of ice.

An interesting glacier.

It seemed as if an interior ice-lake was rising above the brink of the cliffs that confined it. In many places it could be seen extending or forcing its way over the very crest of the rocks, and hanging down in huge icy stalactites 70 and 100 feet long. These were still lengthening out by the continuous overflow,—some of them breaking off as their weight became too great for their tenacity; others swelling by constant supplies from the interior, but spitting off fragmentary masses with an unrelenting clamour. The plain below these cataractine glaciers was piling up with the debris, while torrents of the melted rubbish found their way, foaming and muddy, to the sea, carrying gravel and rocks along with them.

Progress of the glacier.

These ice-cascades, as we called them, kept up their din the whole night, sometimes startling us with a heavy booming sound, as the larger masses fell, but more generally rattling away like the random fires of a militia parade. On examining the ice of which they were made up, I found grains of *neve* larger than a walnut; so large, indeed, that it was hard to realize that they could be

Ice-cascades.

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formed by the ordinary granulating processes of the winter snows. My impression is, that the surface of the plateau-ice, the *mer de glace* of the island, is made up of these agglomerated nodules, and that they are forced out and discarded by the advance of the more compact ice from higher levels.⁵⁵

er snows.
e mer de
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the more

CHAPTER XXVI.

THE ICE-FOOT IN AUGUST—THE PACK IN AUGUST—ICE-BLASTING—FOX-
TRAP POINT—WARPING—THE PROSPECT—APPROACHING CLIMAX—SIG-
NAL CAIRN—THE RECORD—PROJECTED WITHDRAWAL—THE QUESTION—
THE DETERMINATION—THE RESULT.

It was with mingled feelings that we neared the brig. Our little party had grown fat and strong upon the auks and eiders and scurvy-grass; and surmises were rife among us as to the condition of our comrades and the prospects of our ice-bound little ship.

CHAPTER
XXVI.
Return to
the brig.

The tide-leads, which one year ago had afforded a precarious passage to the vessel, now barely admitted our whale-boat; and, as we forced her through the broken ice, she showed such signs of hard usage, that I had her hauled up upon the land-belt and housed under the cliffs at Six-mile Ravine. We crossed the rocks on foot, aided by our jumping-poles, and startled our shipmates by our sudden appearance.

In the midst of the greeting which always met our returning parties, and which gave to our little vessel the endearing associations of a homestead, our thoughts reverted to the feeble chances of our liberation, and the failure of our recent effort to secure the means of a retreat.

The brig had been imprisoned by closely-cementing ice for eleven months, during which period she had not budged an inch from her icy cradle. My journal will show the efforts and the hopes which engrossed our few remaining days of uncertainty and suspense:—

Time of
imprison-
ment in
the ice.

"August 8, Tuesday.—This morning two saw-lines were passed from the open-water pools at the sides of our stern-post, and the ice was bored for blasting. In the course of our operations the brig surged and righted, rising two and a half feet. We are now trying to warp her a few yards toward Butler Island, where we again go to work with our powder-canisters.

Operations
in August.

"August 11, Friday.—Returned yesterday from an inspection of the ice toward the Esquimaux settlements; but, absorbing as was my errand, I managed to take geognostical sections and pro-

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files of the coast as far south as Peter Force Bay, beyond which the ice was impenetrable.

Thickness
of the ice-
foot.

"I have often referred to the massive character of the ice in that neighbourhood. The ice-foot, by our winter measurement 27 feet in mean thickness by 40 yards in width, is now of dimensions still more formidable. Large masses, released like land-slides by the action of torrents from the coast, form here and there a belt or reef, which clogs the shoal water near the shore and prevents a passage. Such ice I have seen 36 feet in height; and when subjected, as it often is, to hummock-squeezing, 60 and 70 feet. It requires experience to distinguish it from the true iceberg.

Drift ice.

"When I passed up the sound on the 6th of August, after my long southern journey, I found the ice-foot comparatively unbroken, and a fine interval of open water between it and the large floes of the pack. Since then this pack has been broken up, and the comminuted fragments, forming a great drift, move with tides and currents in such a way as to obliterate the 'landwater' at high tide, and under some circumstances at other times. This broken rubbish occasionally expands enough to permit a boat to pass through; but, as we found it, a passage could only be effected by heavy labour, and at great expense to our boat, nearly unseaworthy now from her former trials. We hauled her up near Bedevilled Headland, and returned to the brig on foot.

Changes
from the
disruption
of the
pack.

"As I travelled back along the coast, I observed the wonderful changes brought about by the disruption of the pack. It was my hope to have extricated the brig, if she was ever to be liberated, before the drift had choked the land-leads; but now they are closely jammed with stupendous ice-fragments, records of inconceivable pressures. The bergs, released from their winter cement, have driven down in crowds, grounding on the shallows, and extending in roofs or chains out to seaward, where they have caught and retained the floating ices. The prospect was really desolation itself. One floe measured nine feet in mean elevation above the water-level; thus implying a tabular thickness by direct congelation of 63 feet. It had so closed in with the shore, too, as to rear up a barricade of crushed ice which it was futile to attempt to pass. All prospect of forcing a passage ceased north of Six-mile Ravine.

"On reaching the brig I found that the blasting had succeeded;

one canister cracked and uplifted 200 square yards of ice with but five pounds of powder. A prospect showed itself of getting inside the island at high water; and I determined to attempt it at the highest spring-tide, which takes place on the 12th.

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Ice blasting.

"August 12, *Saturday*.—The brig bore the strain of her new position very well. The tide fell 15 feet, leaving her high and dry; but, as the water rose, everything was replaced, and the deck put in order for warping again. Every one in the little vessel turned to; and after much excitement, at the very top of the tide, she passed 'by the skin of her teeth.' She was then warped into a bight of the floe, near Fox-Trap Point, and there she now lies.

"We congratulate ourselves upon effecting this crossing. Had we failed, we should have had to remain fast probably for the high tides a fortnight hence. The young ice is already making, and our hopes rest mainly upon the gales of late August and September.

"August 13, *Sunday*.—Still fast to the old floe near Fox-Trap Point, waiting a heavy wind as our only means of liberation. The land-trash is cemented by young ice, which is already an inch and a half thick. The thermometer has been as low as 29°; but the fog and mist which prevail to-day are in our favour. The perfect clearness of the past five days hastened the growth of young ice, and it has been forming without intermission.

Fast to a
floe near
Fox-Trap
Point.

"I took a long walk to inspect the ice towards Six-mile Ravine. This ice has never been moved either by wind or water since its formation. I found that it lined the entire shore with long ridges of detached fragments—a discouraging obstacle, if it should remain, in the way of our future liberation. It is in direct contact with the big floe that we are now fast to, and is the remnant of the triple lines of 'land-ices' which I have described already. I attribute its permanency to the almost constant shadow of the mountains near it.

Ice inspection.

"August 15, *Tuesday*.—To-day I made another ice-inspection to the north-east. The floe on which I have trudged so often, the big bay-floe of our former mooring, is nearly the same as when we left it. I recognised the holes and cracks, through the fog, by a sort of instinct. M'Gary and myself had little difficulty in reaching the Fiord Water by our jumping-poles.

"I have my eye on this water; for it may connect with the North-east Headland, and hereafter give us a passage.

CHAPTER
XXVI.Signs of
approach-
ing winter.

"The season travels on : the young ice grows thicker, and my messmates' faces grow longer every day. I have again to play buffoon to keep up the spirits of the party.

"A raven ! The snow-birds begin to fly to the south in groups, coming at night to our brig to hover on the rigging. Winter is hurrying upon us. The poppies are quite wilted.

Warping.

"Examined ice with Mr. Bonsall, and determined to enter the broken land-ices by warping ; not that there is the slightest probability of getting through, but it affords moral aid and comfort to the men and officers : it looks as if we were doing something.

"*August 17, Thursday.*—Warped about 100 yards into the trash, and, after a long day of labour, have turned in, hoping to recommence at 5 A.M. to-morrow.

"In five days the spring-tides come back : should we fail in passing with them, I think our fortunes are fixed. The young ice bore a man this morning : it had a bad look, this man-supporting August ice ! The temperature never falls below 28° ; but it is cold o' nights with no fire.

Allowance
of fuel
reduced.

"*August 18, Friday.*—Reduced our allowance of wood to six pounds a meal. This, among eighteen months, is one-third of a pound of fuel for each. It allows us coffee twice a day, and soup once. Our fare besides this is cold pork boiled in quantity and eaten as required. This sort of thing works badly ; but I must save coal for other emergencies. I see 'darkness a-head.

A horrible
prospect.

"I inspected the ice again to-day. Bad ! bad !—I must look another winter in the face. I do not shrink from the thought ; but, while we have a chance ahead, it is my first duty to have all things in readiness to meet it. It is *horrible*—yes, that is the word—to look forward to another year of disease and darkness to be met without fresh food and without fuel. I should meet it with a more tempered sadness if I had no comrades to think for and protect.

Sunday
rest and
daily
prayer.

"*August 20, Sunday.*—Rest for all hands. The daily prayer is no longer, 'Lord, accept our gratitude and bless our undertaking,' but, 'Lord, accept our gratitude and restore us to our homes.' The ice shows no change : after a boat and foot journey around the entire south-eastern curve of the bay, no signs !

"I was out in the *Red Eric* with Bonsall, McGary, Hans, Riley and John. We tracked her over the ice to the Burgomaster Cove

the flanking cape of Charlotte Wood Fiord and its river. Here we launched her, and went all round the long canal which the running waters have eaten into the otherwise unchanged ice. Charlotte Wood Fiord is a commanding sheet of water, nearly as wide as the Delaware : in the midst of the extreme solidity around us, it looked deceitfully gladdening. After getting to the other side, near little Willie's Monument, we ascended a high bluff, and saw everything weary and discouraging beyond. Our party returned quite crestfallen."

My attempt to reach Beechy Island had disclosed, as I thought it would, the impossibility of reaching the settlements of Greenland. Between the American and the opposite side of the bay was one continuous pack of ice, which, after I had travelled on it for many miles to the south, was still of undefined extent before me. The birds had left their colonies. The water-streams from the bergs and of the shore were freezing up rapidly. The young ice made the water-surface impassable even to a whaleboat. It was clear to me that without an absolute change of circumstances, such as it was vain to look for any longer, to leave the ship would be to enter upon a wilderness destitute of resources, and from which it would be difficult, if not impracticable, to return.

Everything before us was involved in gloomy doubt. Hopeful as I had been, it was impossible not to feel that we were near the climax of the expedition.

I determined to place upon Observatory Island a large signal-beacon or cairn, and to bury under it documents which, in case of disaster to our party, would convey to any who might seek us intelligence of our proceedings and our fate. The memory of the first winter quarters of Sir John Franklin, and the painful feelings with which, while standing by the graves of his dead, I had five years before sought for written signs pointing to the fate of the living, made me careful to avoid a similar neglect.

A conspicuous spot was selected upon a cliff looking out upon the icy desert, and on a broad face of rock the words :—

A D V A N C E,

A.D. 1853-54.

were painted in letters which could be read at a distance. A pyramid of heavy stones, perched above it, was marked with the

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—
Expedition in the
Red Eric.

Gloomy
prospects.

A signal
cairn.

The in-
scription
on the
rock.

CHAPTER
XXVI.A beacon
and a
grave-
stone.

Christian symbol of the cross. It was not without a holier sentiment than that of mere utility that I placed under this the coffins of our two poor comrades. It was our beacon and their grave-stone.

Near this a hole was worked into the rock, and a paper, enclosed in glass, sealed in with melted lead. It read as follows :—

BRIG ADVANCE, August 14, 1854.

Names of
the mem-
bers of the
expedi-
tion.

"E. K. Kane, with his comrades, Henry Brooks, John Wall Wilson, James McGary, I. I. Hayes, Christian Ohlsen, Amos Bon-sall, Henry Goodfellow, August Sontag, William Morton, J. Carl Petersen, George Stephenson, Jefferson Temple Baker, George Riley, Peter Schubert, George Whipple, John Blake, Thomas Hickey, William Godfrey, and Hans Cristian, members of the Second Grinnell Expedition in search of Sir John Franklin and the missing crews of the *Erebus* and *Terror*, were forced into this harbour while endeavouring to bore the ice to the north and east.

When
frozen in.

"They were frozen in on the 8th of September, 1853, and liberated——

Labours of
the expe-
dition.

"During this period the labours of the expedition have delineated 960 miles of coast-line, without developing any traces of the missing ships or the slightest information bearing upon their fate. The amount of travel to effect this exploration exceeded 2000 miles, all of which was upon foot or by the aid of dogs.

"Greenland has been traced to its northern face, whence it is connected with the further north of the opposite coast by a great glacier. This coast has been charted as high as lat. 82° 27'. Smith's Sound expands into a capacious bay : it has been surveyed throughout its entire extent. From its northern and eastern corner, in lat. 80° 10', long. 66°, a channel has been discovered and followed until further progress was checked by water free from ice. This channel trended nearly due north, and expanded into an apparently open sea, which abounded with birds and bears and marine life.

"The death of the dogs during the winter threw the travel essential to the above discoveries upon the personal efforts of the officers and men. The summer finds them much broken in health and strength.

"Jefferson Temple Baker and Peter Schubert died from injuries received from cold while in manly performance of their duty. Their remains are deposited under a cairn at the north point of Observatory Island. .

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XXVI.
Deaths
from cold.

"The site of the observatory is 76 English feet from the northernmost salient point of this island, in a direction south 14° east. Its position is in lat. $78^{\circ} 37' 10''$, long. $70^{\circ} 40'$. The mean tidal level is 29 feet below the highest point upon this island. Both of these sites are further designated by copper bolts sealed with melted lead into holes upon the rocks.

Site of the
observa-
tory.

"On the 12th of August, 1854, the brig warped from her position, and, after passing inside the group of islands, fastened to the outer floe about a mile to the north-west, where she is now awaiting further changes in the ice.

Position
of the
brig.

(Signed) "E. K. KANE,
" Commanding Expedition.

"FOX-TRAP POINT, August 14, 1854."

Some hours later, the following note was added :—

"The young ice having formed between the brig and this island, and prospects of a gale showing themselves, the date of departure is left unfilled. If possible, a second visit will be made to insert our dates, our final escape being still dependent upon the course of the season.

Additional
note.

E. K. KANE."

And now came the question of the second winter : how to look our enemy in the face, and how to meet him. Anything was better than inaction ; and, in spite of the uncertainty which yet attended our plans, a host of expedients were to be resorted to, and much Robinson Crusoe labour ahead. Moss was to be gathered for eking out our winter fuel, and willow-stems, and stonecrops, and sorrel, as antiscorbutics, collected and buried in the snow. But while all these were in progress came other and graver questions

Prospect
of a second
winter.

Some of my party had entertained the idea that an escape to the south was still practicable ; and this opinion was supported by Mr. Petersen, our Danish interpreter, who had accompanied the Searching Expedition of Captain Penny, and had a matured experience in the changes of Arctic ice. They even thought that the safety of all would be promoted by a withdrawal from the brig.

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The cap-
tain's
duty.

"August, 21, Monday.—The question of detaching a party was in my mind some time ago ; but the more I thought it over, the more I was convinced that it would be neither right in itself nor practically safe. For myself personally, it is a simple duty of honour to remain by the brig : I could not think of leaving her till I had proved the effect of the latter tides ; and after that, as I have known all along, it would be too late. Come what may, I share her fortunes.

What
ought the
crew to
do ?

"But it is a different question with my associates. I cannot expect them to adopt my impulses ; and I am by no means sure that I ought to hold them bound by my conclusions. Have I the *moral right* ? for, as to nautical rules, they do not fit the circumstances ; among the whalers, when a ship is hopelessly beset, the master's authority gives way, and the crew take counsel for themselves whether to go or stay by her. My party is subordinate and well-disposed ; but if the restlessness of suffering makes some of them anxious to brave the chances, they may certainly plead that a second winter in the ice was no part of the cruise they bargained for.

Bad pro-
spect for
winter.

"But what presses on me is of another character. I cannot disguise it from myself that we are wretchedly prepared for another winter on board. We are a set of scurvy-riddled, broken-down men ; our provisions are sorely reduced in quantity, and are altogether unsuited to our condition. My only hope of maintaining or restoring such a degree of health among us as is indispensable to our escape in the spring has been and must be in a wholesome, elastic tone of feeling among the men : a reluctant, brooding, disheartened spirit would sweep our decks like a pestilence. I fear the bane of depressing example.

"I know all this as a medical man and an officer ; and I feel that we might be wearing away the hearts and energies, if not the lives of all, by forcing those who were reluctant to remain. With half a dozen confiding, resolute men, I have no fears of ultimate safety.

"I will make a thorough inspection of the ice to-morrow, and decide finally the prospects of our liberation.

Escape of
the brig
hopeless.

"August 23, Wednesday.—The brig cannot escape. I got an eligible position with my sledge to review the floes, and returned this morning at two o'clock. There is no possibility of our re-

lease, unless by some extreme intervention of the coming tides. I doubt whether a boat could be forced as far as the Southern Water. When I think of the extraordinary way in which the ice was impacted last winter, how very little it has yielded through the summer, and how early another winter is making its onset upon us, I am very doubtful, indeed, whether our brig can get away at all. It would be inexpedient to attempt leaving her now in boats; the water-streams closing, the pack nearly fast again, and the young ice almost impenetrable.

"I shall call the officers and crew together, and make known to them very fully how things look, and what hazards must attend such an effort as has been proposed among them. They shall have my views unequivocally expressed. I will then give them twenty-four hours to deliberate; and at the end of that time all who determine to go shall say so in writing, with a full exposition of the circumstances of the case. They shall have the best outfit I can give, an abundant share of our remaining stores, and my good-bye blessing.

The captain's resolution.

"*August 24, Thursday.*—At noon to-day I had all hands called, and explained to them frankly the considerations which have determined me to remain where we are. I endeavoured to show them that an escape to open water could not succeed, and that the effort must be exceedingly hazardous: I alluded to our duties to the ship: in a word, I advised them strenuously to forego the project. I then told them that I should freely give my permission to such as were desirous of making the attempt, but that I should require them to place themselves under the command of officers selected by them before setting out, and to renounce in writing all claims upon myself and the rest who were resolved to stay by the vessel. Having done this, I directed the roll to be called, and each man to answer for himself."

A council called.

In the result, eight out of the seventeen survivors of my party resolved to stand by the brig. It is just that I should record their names. They were Henry Brooks, James McGary, J. W. Wilson, Henry Goodfellow, William Morton, Christian Ohlsen, Thomas Hickey, Hans Cristian.

The decision of the crew

I divided to the others their portion of our resources justly and even liberally; and they left us on Monday, the 28th, with every appliance our narrow circumstances could furnish to speed and

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guard them. One of them, George Riley, returned a few days afterward ; but weary months went by before we saw the rest again. They carried with them a written assurance of a brother's welcome should they be driven back ; and this assurance was redeemed when hard trials had prepared them to share again our fortunes.

a few days
 saw the rest
 of a brother's
 chance was re-
 ceived again our

CHAPTER XXVII.

DISCIPLINE—BUILDING IGLOE—TOSSUT—MOSSING—AFTER SEAL—ON THE
 YOUNG ICE—GOING TOO FAR—SEALS AT HOME—IN THE WATER—IN
 SAFETY—DEATH OF TIGER.

THE party moved off with the elastic step of men confident in their purpose, and were out of sight in a few hours. As we lost them among the hummocks, the stern realities of our condition pressed themselves upon us anew. The reduced numbers of our party, the helplessness of many, the waning efficiency of all, the impending winter, with its cold, dark night, our penury of resources, the dreary sense of increased isolation,—these made the staple of our thoughts. For a time Sir John Franklin and his party, our daily topic through so many months, gave place to the question of our own fortunes,—how we were to escape, how to live. The summer had gone, the harvest was ended, and—— We did not care to finish the sentence.

CHAPTER
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 —
 Dreary
 forebod-
 ing.

Following close on this gloomy train, and in fact blending with it, came the more important discussion of our duties. We were like men driven to the wall, quickened, not depressed. Our plans were formed at once : there is nothing like emergency to speed, if not to instruct, the energies.

It was my first definite resolve that, come what might, our organization and its routine of observances should be adhered to strictly. It is the experience of every man who has either combated difficulties himself, or attempted to guide others through them, that the controlling law shall be systematic action. Nothing depresses and demoralizes so much as a surrender of the approved and habitual forms of life. I resolved that everything should go on as it had done. The arrangement of hours, the distribution and details of duty, the religious exercises, the ceremonials of the table, the fires, the lights, the watch, even the labours of the observatory and the notation of the tides and the sky,—nothing should be intermitted that had contributed to make up the day.

Arrange-
 ment of
 duties.

CHAPTER
XXVII.Lessons
learned
from
Esqui-
maux.

My next was to practise on the lessons we had learned from the Esquimaux. I had studied them carefully, and determined that their form of habitation and their peculiarities of diet, without their unthrift and filth, were the safest and best to which the necessity of our circumstances invited us.

My journal tells how these resolves were carried out :—

"*September 6, Wednesday.*—We are at it, all hands, sick and well, each man according to his measure, working at our winter's home. We are none of us in condition to brave the frost, and our fuel is nearly out. I have determined to borrow a lesson from our Esquimaux neighbours, and am turning the brig into an *igloë*.

"The sledge is to bring us moss and turf from wherever the men can scrape it. This is an excellent non-conductor ; and when



GATHERING MOSS.

An igloë
in the
brig.

we get the quarter-deck well padded with it we shall have a nearly cold-proof covering. Down below we will enclose a space some eighteen feet square, and pack it from floor to ceiling with inner walls of the same material. The floor itself we are calking carefully with plaster of Paris and common paste, and will cover it, when we have done, with Manilla oakum a couple of inches deep, and a canvas carpet. The entrance is to be from the hold, by a low, moss-lined tunnel, the *tossut* of the native huts, with as

many doors and curtains to close it up as our ingenuity can devise. This is to be our apartment of all uses,—not a very large one; but we are only ten to stow away, and the closer the warmer.

"September 9, *Saturday*.—All hands but the carpenter and Morton are out 'mossing.' This mossing, though it has a very May-day sound, is a frightfully wintry operation. The mixed turf of willows, heaths, grasses, and moss is frozen solid. We cannot cut it out from the beds of the snow-streams any longer, and are obliged to seek for it on the ledges of the rocks, quarrying it with crowbars, and carrying it to the ship like so much stone. I would escape this labour if I could, for our party have all of them more or less scurvy in their systems, and the thermometer is often below zero. But there is no help for it. I have some eight sledge-loads more to collect before our little home can be called wind-proof; and then, if we only have snow enough to bank up against the brig's sides, I shall have no fear either for height or uniformity of temperature.

"September 10, *Sunday*.—'The work goes bravely on.' We have got moss enough for our roof, and something to spare for below. To-morrow we begin to strip off the outer-deck planking of the brig, and to stack it for firewood. It is cold work, hatchets open and no fires going; but we saved time enough for our Sunday's exercises, though we forego its rest.

"It is twelve months to-day since I returned from the weary foot-tramp that determined me to try the winter search. Things have changed since then, and the prospect ahead is less cheery. But I close my pilgrim-experience of the year with devout gratitude for the blessings it has registered, and an earnest faith in the support it pledges for the times to come.

"September 11, *Monday*.—Our stock of game is down to a mere mouthful,—six long-tailed ducks not larger than a partridge, and three ptarmigan. The rabbits have not yet come to us, and the foxes seem tired of touching our trap-baits.

"I determined last Saturday to try a novel expedient for catching seal. Not more than ten miles to seaward the icebergs keep up a rude stream of broken ice and water, and the seals resort there in scanty numbers to breathe. I drove out with my dogs, taking Hans along; but we found the spot so hemmed in by loose and

CHAPTER
XXVII.

Firewood.

Experi-
ence of
the past
year.

CHAPTER
XXVII.Equip-
ment for
seal hunt-
ing.

fragile ice that there was no approaching it. The thermometer was 8°, and a light breeze increased my difficulties.

"*Deo volente*, I will be more lucky to-morrow. I am going to take my long Kentucky rifle, the kayak, an Esquimaux harpoon with its attached line and bladder, *naligeit* and *awahtok*, and a pair of large snow-shoes to boot. My plan this time is to kneel where the ice is unsafe, resting my weight on the broad surface of the snow-shoes, Hans following astride of his kayak, as a sort of life-preserver in case of breaking in. If I am fortunate enough to stalk within gun-range, Hans will take to the water and secure the game before it sinks. We will be gone for some days probably, tenting it in the open air; but our sick men—that is to say, all of us—are languishing for fresh meat."

I started with Hans and five dogs, all we could muster from our disabled pack, and reached the "Pinnacly Berg" in a single hour's run. But where was the water? where were the seal? The floes had closed, and the crushed ice was all that told of our intended hunting-ground.

The
"Bergy
Belt."

Ascending a berg, however, we could see to the north and west the dark cloud-stratus which betokens water. It ran through our old battie-ground, the "Bergy Belt,"—the labyrinth of our wanderings after the frozen party of last winter. I had not been over it since, and the feeling it gave me was anything but joyous.

Seals in
sight.

But in a couple of hours we emerged upon a plain unlimited to the eye and smooth as a billiard-table. Feathers of young frosting gave a plush-like nap to its surface, and toward the horizon dark columns of frost-smoke pointed clearly to the open water. This ice was firm enough; our experience satisfied us that it was not a very recent freezing. We pushed on without hesitation, cheering ourselves with the expectation of coming every minute to the seals. We passed a second ice-growth; it was not so strong as the one we had just come over, but still safe for a party like ours. On we went at a brisker gallop, maybe for another mile, when Hans sang out, at the top of his voice, 'Pusey! puseymut! seal, seal!' At the same instant the dogs bounded forward, and, as I looked up, I saw crowds of grey netsik, the rough or hispid seal of the whalers, disporting in an open sea of water.

I had hardly welcomed the spectacle when I saw that we had passed upon a new belt of ice that was obviously unsafe. To the

right and left and front was one great expanse of snow-flowered ice. The nearest solid floe was a mere lump, which stood like an island in the white level. To turn was impossible; we had to keep up our gait. We urged on the dogs with whip and voice, the ice rolling like leather beneath the sledge-runners; it was more than a mile to the lump of solid ice. Fear gave to the poor beasts their utmost speed, and our voices were soon hushed to silence.

CHAPTER
XXVII.Unsafe
ice.

The suspense, unrelieved by action or effort, was intolerable; we knew that there was no remedy but to reach the floe, and that everything depended upon our dogs, and our dogs alone. A moment's check would plunge the whole concern into the rapid tideway; no presence of mind or resource, bodily or mental, could avail us. The seals—for we were now near enough to see their expressive faces—were looking at us with that strange curiosity which seems to be their characteristic expression: we must have passed some fifty of them, breast-high out of water, mocking us by their self-complacency.

The seals
in safety.

This desperate race against fate could not last: the rolling of the tough salt-water ice terrified our dogs; and when within fifty paces from the floe they paused. The left-hand runner went through; our leader "Toodlamick" followed, and in one second the entire left of the sledge was submerged. My first thought was to liberate the dogs. I leaned forward to cut poor Tood's traces, and the next minute was swimming in a little circle of pasty ice and water alongside him. Hans, dear good fellow, drew near to help me, uttering piteous expressions in broken English; but I ordered him to throw himself on his belly, with his hands and legs extended, and to make for the island by cogging himself forward with his jack-knife. In the meantime—a mere instant—I was floundering about with sledge, dogs, and lines, in confused puddle around me.

The sledge
and dogs
in the
water.

I succeeded in cutting poor Tood's lines and letting him scramble to the ice, for the poor fellow was drowning me with his piteous caresses, and made my way for the sledge; but I found that it would not buoy me, and that I had no resource but to try the circumference of the hole. Around this I paddled faithfully, the miserable ice always yielding when my hopes of a lodgment were greatest. During this process I enlarged my circle of operations to a very uncomfortable diameter, and was beginning to feel weaker

CHAPTER
XXVII.Hans in
the water.

after every effort. Hans meanwhile had reached the firm ice, and was on his knees, like a good Moravian, praying incoherently in English and Esquimaux; at every fresh crushing-in of the ice he would ejaculate "God!" and when I recommenced my paddling he recommenced his prayers.

A narrow
escape.

I was nearly gone. My knife had been lost in cutting out the dogs; and a spare one which I carried in my trousers-pocket was so enveloped in the wet skins that I could not reach it. I owed my extrication at last to a newly broken team dog, who was still fast to the sledge, and in struggling carried one of the runners chock against the edge of the circle. All my previous attempts to use the sledge as a bridge had failed, for it broke through, to the much greater injury of the ice. I felt that it was a last chance. I threw myself on my back, so as to lessen as much as possible my weight, and placed the nape of my neck against the rim or edge of the ice; then with caution slowly bent my leg, and, placing the ball of my mocassined foot against the sledge, I pressed steadily against the runner, listening to the half-yielding crunch of the ice beneath.

Return to
the brig.

Presently I felt that my head was pillowed by the ice, and that my wet fur jumper was sliding up the surface. Next came my shoulders; they were fairly on. One more decided push, and I was launched up on the ice and safe. I reached the ice-floe, and was frictioned by Hans with frightful zeal. We saved all the dogs; but the sledge, kayak, tent, gun, snow-shoes, and everything besides, were left behind. The thermometer at 8° will keep them frozen fast in the sledge till we can come and cut them out.

Death of
Tiger.

On reaching the ship, after a twelve mile trot, I found so much of comfort and warm welcome that I forgot my failure. The fire was lit up, and one of our few birds slaughtered forthwith. It is with real gratitude that I look back upon my escape, and bless the great presiding Goodness for the very many resources which remain to us.

"September 14, *Thursday*.—Tiger, our best remaining dog, the partner of poor Bruiser, was seized with a fit, ominously resembling the last winter's curse. In the delirium which followed his seizure, he ran into the water and drowned himself, like a sailor with the horrors. The other dogs are all doing well."

CHAPTER XXVIII.

THE ESQUIMAUX—LARCENY—THE ARREST—THE PUNISHMENT—THE TREATY
—“UNBROKEN FAITH”—MY BROTHER—RETURN FROM A HUNT—OUR
LIFE—ANOATOK—A WELCOME—TREATY CONFIRMED.

It is, I suppose, the fortune of every one who affects to register the story of an active life, that his record becomes briefer and more imperfect in proportion as the incidents press upon each other more rapidly and with increasing excitement. The narrative is arrested as soon as the faculties are claimed for action, and the memory brings back reluctantly afterward those details which, though interesting at the moment, have not reflected themselves in the result. I find that my journal is exceedingly meagre for the period of our anxious preparations to meet the winter, and that I have omitted to mention the course of circumstances which led us step by step into familiar communication with the Esquimaux.

CHAPTER
XXVIII.
Journal
writing.

My last notice of this strange people, whose fortunes became afterward so closely connected with our own, was at the time of Myouk's escape from imprisonment on board the brig. Although during my absence on the attempted visit to Beechy Island, the men I had left behind had frequent and unrestrained intercourse with them, I myself saw no natives in Rensselaer Bay till immediately after the departure of Petersen and his companions. Just then, by a coincidence which convinced me how closely we had been under surveillance, a party of three made their appearance, as if to note for themselves our condition and resources.

Appear-
ance of a
party of
Esqui-
maux.

Times had indeed altered with us. We had parted with half our provisions, half our boats and sledges, and more than half our able-bodied men. It looked very much as if we were to lie ensconced in our ice-battered citadel, rarely venturing to sally out for exploration or supplies. We feared nothing, of course, but the want of fresh meat, and it was much less important that our neighbours should fear us than that we should secure from them

CHAPTER
XXVIII.Entertain-
ment of
the visi-
tors.

offices of kindness. They were overbearing sometimes, and needed the instruction of rebuke; but I treated them with carefully-regulated hospitality.

Theft.

When the three visitors came to us near the end of August, I established them in a tent below deck, with a copper lamp, a cooking-basin, and a liberal supply of slush for fuel. I left them under guard when I went to bed at two in the morning, contentedly eating and cooking and eating again without the promise of an intermission. An American or a European would have slept after such a debauch till the recognised hour for hock and seltzer-water. But our guests managed to elude the officer of the deck and escape unsearched. They repaid my liberality by stealing not only the lamp, boiler, and cooking-pot they had used for the feast, but Nannook also, my best dog. If the rest of my team had not been worn down by over-travel, no doubt they would have taken them all. Besides this, we discovered the next morning that they had found the buffalo-ropes and India-rubber cloth which M'Gary had left a few days before on the ice-foot near Six-mile Ravine, and had added the whole to the spoils of their visit.

Pursuit
of the
thieves.

The theft of these articles embarrassed me. I was indisposed to take it as an act of hostility. Their pilferings before this had been conducted with such a superb simplicity, the detection followed by such honest explosions of laughter, that I could not help thinking they had some law of general appropriation, less removed from the Lyeurgan than the Mosaic code. But it was plain, at least, that we were now too few to watch our property as we had done, and that our gentleness was to some extent misunderstood.

I was puzzled how to inflict punishment, but saw that I must act vigorously, even at a venture. I despatched my two best walkers, Morton and Riley, as soon as I heard of the theft of the stores, with orders to make all speed to Anoatok, and overtake the thieves, who, I thought, would probably halt there to rest. They found young Myouk making himself quite comfortable in the hut, in company with Sievu, the wife of Metek, and Aningna, the wife of Marsinga, and my buffalo-ropes already tailored into kapetahs on their backs.

A continued search of the premises recovered the cooking-utensils, and a number of other things of greater or less value that

we had not missed from the brig. With the prompt ceremonial which outraged law delights in among the officials of the police everywhere, the women were stripped and tied; and then, laden with their stolen goods and as much walrus-beef besides from their own stores as would pay for their board, they were marched on the instant back to the brig.

CHAPTER
XXVIII.
The
arrest.

The thirty miles was a hard walk for them; but they did not complain, nor did their constabulary guardians, who had marched thirty miles already to apprehend them. It was hardly twenty-four hours since they left the brig with their booty before they were prisoners in the hold, with a dreadful white man for keeper, who never addressed to them a word that had not all the terrors of an unintelligible reproof, and whose scowl, I flatter myself, exhibited a well-arranged variety of menacing and demoniacal expressions.

The
thieves in
prison.

They had not even the companionship of Myouk. Him I had despatched to Metek, "head-man of Etah, and others," with the message of a melo-dramatic tyrant, to negotiate for their ransom. For five long days the women had to sigh and sing and cry in solitary converse,—their appetite continuing excellent, it should be remarked, though mourning the while a rightfully-impending doom. At last the great Metek arrived. He brought with him Ootuniah, another man of elevated social position, and quite a sledge-load of knives, tin cups, and other stolen goods, refuse of wood and scraps of iron, the sinful prizes of many covetings.

Arrival of
the chief.

I may pass over our peace conferences and the indirect advantages which I, of course, derived from having the opposing powers represented in my own capital. But the splendours of our Arctic centre of civilization, with its wonders of art and science,—our "fire-death" ordnance included,—could not all of them impress Metek so much as the intimations he had received of our superior physical endowments. Nomads as they are, these people know all the world besides what endurance and energy it requires to brave the moving ice and snow-drifts. Metek thought, no doubt, that our strength was gone with the withdrawing party; but the fact, that within ten hours after the loss of our buffaloes we had marched to their hut, seized three of their culprits, and marched them back to the brig as prisoners,—such a sixty miles' achievement as this they thoroughly understood. It con-

CHAPTER
XXVIII.The pro-
tocol.

firmed them in the faith that the whites are, and of right ought to be everywhere the dominant tribe.

The protocol was arranged without difficulty, though not without the accustomed number of adjournments for festivity and repose. It abounded in protestations of power, fearlessness, and good-will by each of the contracting parties, which meant as much as such protestations usually do on both sides the Arctic circle. I could give a summary of it without invading the privacy of a diplomatic bureau. for I have notes of it that were taken by a subordinate; but I prefer passing at once to the reciprocal engagements in which it resulted.

Promises
of the
Esqui-
maux.

On the part of the *Inuit*, the Esquimaux, they were after this fashion :—

“We promise that we will not steal. We promise we will bring you fresh meat. We promise we will sell or lend you dogs. We will keep you company whenever you want us, and show you where to find the game.”

On the part of the *Kablunah*, the white men, the stipulation was of this ample equivalent :—

Equivalent
promised
by the
white
men.

“We promise that we will not visit you with death or sorcery, nor do you any hurt or mischief whatsoever. We will shoot for you on our hunts. You shall be made welcome aboard ship. We will give you presents of needles, pins, two kinds of knife, a hoop, three bits of hard wood, some fat, an awl, and some sewing-thread; and we will trade with you of these and everything else you want for walrus and seal-meat of the first quality.”

The clos-
ing for-
mula.

And the closing formula might have read, if the Esquimaux political system had included reading among its qualifications for diplomacy, in this time-consecrated and, in civilized regions, veracious assurance :—

“We, the high contracting parties, pledge ourselves now and for ever brothers and friends.”

Ratifica-
tion of the
treaty.

This treaty—which, though I have spoken of it jocosely, was really an affair of much interest to us—was ratified, with Hans and Morton as my accredited representatives, by a full assembly of the people at Etah. All our future intercourse was conducted under it. It was not solemnized by an oath; but it was never broken. We went to and fro between the villages and the brig, paid our visits of courtesy and necessity on both sides, met each

other in hunting parties on the floe and the ice-foot, organized a general community of interests, and really, I believe, established some personal attachments deserving of the name. As long as we remained prisoners of the ice, we were indebted to them for invaluable counsel in relation to our hunting expeditions; and in the joint hunt we shared alike, according to their own laws. Our dogs were in one sense common property; and often have they robbed themselves to offer supplies of food to our starving teams. They gave us supplies of meat at critical periods; we were able to do as much for them. They learned to look on us only as benefactors; and, I know, mourned our departure bitterly. The greeting which they gave my brother John, when he came out after me to Etah with the Rescue Expedition, should be of itself

CHAPTER
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Mutual
advan-
tages de-
rived
from the
treaty.



ESQUIMAUX.

enough to satisfy me of this. I should be glad to borrow from his ingenious narrative the story of his meeting with Myouk, and Metek, and Ootuniah. and of the almost affectionate confidence

CHAPTER
XXVIII.Return
from a
walrus
hunt.

with which the maimed and sick invited his professional succour, as the representative of the elder "Docto Kayen."

"*September 16, Saturday.*—Back last night from a walrus-hunt. I brought in the spoil with my dogs, leaving Hans and Ohlsen to follow afoot. This Marston rifle is an admirable substitute for the primitive lance-head. It killed at the first fire. Five nights' camping out in the snow, with hard-working days between, have made me ache a little in the joints; but, strange to say, I feel better than when I left the vessel. This climate exacts heavy feeding, but it invites to muscular energy. M'Gary and Morton are off at Anoatok. From what I gathered on the hunt, they will find the council very willing to ratify our alliance. But they should have been at home before this.

Sunday.

"*September 17, Sunday.*—Writing by this miserable flicker of my pork-fat lamp, I can hardly steady pen, paper, or thought. All hands have rested after a heavy week's work, which has advanced us nobly in our arrangements for the winter. The season is by our tables at least three weeks earlier than the last, and everything indicates a severe ordeal ahead of us.

"Just as we were finishing our chapter this morning in the 'Book of Ruth,' M'Gary and Morton came in triumphantly, pretty well worn down by their fifty miles' travel, but with good news, and a flipper of walrus that must weigh some forty pounds. Ohlsen and Hans are in too. They arrived as we were sitting down to celebrate the Anoatok ratification of our treaty of the 6th.

Nomad
life.

"It is a strange life we are leading. We are absolutely nomads, so far as there can be anything of pastoral life in this region; and our wild encounter with the elements seems to agree with us all. Our table talk at supper was as merry as a marriage bell. One party was just in from a seventy-four miles' trip with the dogs; another from a foot-journey of a hundred and sixty, with five nights on the floe. Each had his story to tell; and while the story was telling some at least were projecting new expeditions. I have one myself in my mind's eye, that may peradventure cover some lines of my journal before the winter ends.

Visit to
the Esqui-
maux.

"M'Gary and Morton sledged it along the ice-foot completely round the Reach, and made the huts by ten o'clock the night after they left us. They found only three men, Ootuniah, our elfish rogue Myouk, and a stranger who has not been with us that

we know of. It looked at first a little doubtful whether the visit was not to be misunderstood. Myouk particularly was an awkward party to negotiate with. He had been our prisoner for stealing only a little while before, and at this very moment is an escaped hostage. He was in pawn to us for a lot of walrus-beef, as indemnity for our boat. He thought, naturally enough, that the visit might have something more than a representative bearing on his interests. Both our men had been his jailers on board the brig, and he was the first person they met as they came upon the village.

"But when he found, by M'Gary's expressive pantomime, that the visit was not specially to him, and that the first appeal was to his hospitality and his fellows', his entire demeanour underwent a change. He seemed to take a new character, as if, said Morton, he had dropped a mask. He gave them welcome with unmixed cordiality, carried them to his hut, cleared away the end furthest from the opening for their reception, and filled up the fire of moss and blubber.

A cordial welcome.

"The others joined him, and the attention of the whole settlement was directed at once to the wants of the visitors. Their wet boots were turned toward the fire, their woollen socks rung out and placed on a heated stone, dry grass was padded round their feet, and the choicest cuts of walrus-liver were put into the cooking-pot. Whatever might be the infirmity of their notions of honesty, it was plain that we had no lessons to give them in the virtues of hospitable welcome. Indeed, there was a frankness and cordiality in the mode of receiving their guests, that explained the unreserve and conscious security which they showed when they first visited us.

"I could hardly guess at that time, when we saw them practising antics and grimaces among the rocks, what was the meaning of their harlequin gestures, and how they could venture afterward so fearlessly on board. I have understood the riddle since. It was a display of their powers of entertainment, intended to solicit from us a reception; and the invitation once given, all their experience and impulses assured them of safety.

Entertainment.

"Everything they had, cooking utensils, snow-melting stone, scanty weapons of the chase, personal service, pledges of grateful welcome,—they gave them all. They confirmed all Metek's en-

CHAPTER
XXVIII.Hunting
with the
Esqui-
maux.

gagements, as if the whole favour was for them; and when our party was coming away they placed on the sledge, seemingly as a matter of course, all the meat that was left.

"*September 20, Wednesday.*—The natives are really acting up to contract. They are on board to-day, and I have been off with a party of them on a hunt inland. We had no great luck; the weather was against us, and there are signs of a gale. The thermometer has been 2° below zero for the entire twenty-four hours. This is September with a vengeance!

"*September 22, Friday.*—I am off for the walrus-grounds with our wild allies. It will be my sixth trip. I know the country and its landmarks now as well as any of them, and can name every rock, and chasm, and watercourse, in night or fog, just as I could the familiar spots about the dear Old Mills where I passed my childhood.

"The weather does not promise well; but the state of our larder makes the jaunt necessary."



SECTION OF WINTER APARTMENT.

CHAPTER XXIX.

WALRUS-GROUNDS—LOST ON THE ICE—A BREAK UP—IGLOË OF ANOATOK—
ITS GARNITURE—CREATURE COMFORTS—ESQUIMAUX MUSIC—USAGES OF
THE TABLE—NEW LONDON AVENUE—SCANT DIET LIST—BEAR AND CUB—
A HUNT—CLOSE QUARTERS—BEAR FIGHTING—BEAR-HABITS—BEAR'S
LIVER—RATS—THE TERRIER FOX—THE ARCTIC HARE—THE ICE-FOOT
CANOPY—A WOLF—DOGS AND WOLVES—BEAR AND FOX—THE NATIVES
AND OURSELVES—WINTER QUARTERS—MORTON'S RETURN—THE LIGHT.

"September 29, Friday.—I returned last night from Anoatok, after a journey of much risk and exposure, that I should have avoided but for the insuperable obstinacy of our savage friends.

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A party
set out for
the walrus
grounds.

"I set out for the walrus-grounds at noon, by the track of the 'Wind Point' of Anoatok, known to us as Esquimaux Point. I took the light sledge, and, in addition to the five of my available team, harnessed in two animals belonging to the Esquimaux. Ootuniah, Myouk, and the dark stranger accompanied me, with Morton and Hans.

"Our sledge was overladen; I could not persuade the Esquimaux to reduce its weight; and the consequence was, that we failed to reach Force Bay in time for a day-light crossing. To follow the indentations of the land was to make the travel long and dangerous. We trusted to the tracks of our former journeys, and pushed out on the ice. But the darkness came on us rapidly, and the snow began to drift before a heavy north wind.

Difficulties
of the
journey.

"At about 10 P.M. we had lost the land; and, while driving the dogs rapidly, all of us running alongside of them, we took a wrong direction, and travelled out toward the floating ice of the Sound. There was no guide to the points of the compass; our Esquimaux were completely at fault; and the alarm of the dogs, which became every moment more manifest, extended itself to our party. The instinct of a sledge-dog makes him perfectly aware of unsafe ice, and I know nothing more subduing to a man than the warnings of an unseen peril conveyed by the instinctive fears of the lower animals.

Lost on
the ice.

"We had to keep moving, for we could not camp in the gale,

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that blew around us so fiercely that we could scarcely hold down the sledge. But we moved with caution, feeling our way with the tent-poles, which I distributed among the party for the purpose. A murmur had reached my ear for some time in the cadences of the storm, steadier and deeper, I thought, than the tone of the wind. On a sudden it struck me that I heard the noise of waves, and that we must be coming close on the open water. I had hardly time for the hurried order, 'Turn the dogs,' before a wreath of wet frost-smoke swept over us, and the sea showed itself, with a great fringe of foam, hardly a quarter of a mile ahead. We could now guess our position and its dangers. The ice was breaking up before the storm, and it was not certain that even a direct retreat in the face of the gale would extricate us. I determined to run to the south for Godsend Island. The floes were heavy in that direction, and less likely to give way in a northerly gale. It was at best a dreary venture.

The sound
of the open
water.

The ice
breaking
up.

Travelling
over the
broken ice.

The ice
storm.

"The surf-line kept encroaching on us till we could feel the ice undulating under our feet. Very soon it began to give way. Lines of hummocks rose before us, and we had to run the gauntlet between them as they closed. Escaping these, we toiled over the crushed fragments that lay between them and the shore, stumbling over the projecting crags, or sinking in the water that rose among them. It was too dark to see the island which we were steering for; but the black loom of a lofty cape broke the line of the horizon, and served as a landmark. The dogs, relieved from the burden of carrying us, moved with more spirit. We began to draw near the shore, the ice-storm still raging behind us. But our difficulties were only reaching their climax. We knew as icemen that the access to the land-ice from the floe was, under the most favouring circumstances, both toilsome and dangerous. The rise and fall of the tides always breaks up the ice at the margin of the ice-belt in a tangle of irregular, half-floating masses; and these were now surging under the energies of the gale. It was pitchy dark. I persuaded Ootuniah, the eldest of the Esquimaux, to have a tent-pole lashed horizontally across his shoulders. I gave him the end of a line, which I had fastened at the other end round my waist. The rest of the party followed him.

"As I moved ahead, feeling round me for a practicable way, Ootuniah followed; and when a table of ice was found large

enough, the others would urge forward the dogs, pushing the sledge themselves, or clinging to it, as the moment prompted. We had accidents, of course, some of them menacing for the time, but none to be remembered for their consequences; and at last one after another succeeded in clambering after me upon the ice-foot, driving the dogs before them.

CHAPTER
XXIX.

Safe on the
ice foot.

"Providence had been our guide. The shore on which we landed was Anoatok, not four hundred yards from the familiar Esquimaux homestead. With a shout of joy, each man in his own dialect, we hastened to the 'wind-loved spot;' and in less than an hour, our lamps burning cheerfully, we were discussing a famous stew of walrus-steaks, none the less relished for an unbroken ice-walk of forty-eight miles and twenty haltless hours.

"When I reached the hut, our stranger Esquimaux, whose name we found to be Awahtok, or 'Seal-bladder float,' was striking a fire from two stones—one a plain piece of angular milky quartz, held in the right hand, the other apparently an oxide of iron. He struck them together after the true tinder-box fashion, throwing a scanty supply of sparks on a tinder composed of the silky down of the willow-catkins (*S. lanata*), which he held on a lump of dried moss.

Esqui-
maux way
of striking
fire.

"The hut or igloë at Anoatok was a single rude elliptical apartment, built not unskilfully of stone, the outside lined with sods.

Descrip-
tion of the
igloë.



ESQUIMAUX IGLOË.

At its further end a rude platform, also of stone, was lifted about a foot above the entering floor. The roof formed something of a

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curve. It was composed of flat stones, remarkably large and heavy, arranged so as to overlap each other, but apparently without any intelligent application of the principle of the arch. The height of this cave-like abode barely permitted one to sit upright. Its length was eight feet, its breadth seven feet, and an expansion of the tunnelled entrance made an appendage of perhaps two feet more.

Dimen-
sions.Winter
entrance.

"The true winter entrance is called the *tossut*. It is a walled tunnel, ten feet long, and so narrow that a man can hardly crawl along it. It opens outside below the level of the igloë, into which it leads by a gradual ascent.

Dilapida-
tion of the
structure.

"Time had done its work on the igloë of Anoatok, as among the palatial structures of more southern deserts. The entire front of the dome had fallen in, closing up the *tossut*, and forcing us to enter at the solitary window above it. The breach was large enough to admit a sledge-team; but our Arctic comrades showed no anxiety to close it up. Their clothes saturated with the freezing water of the floes, these iron men gathered themselves round the blubber-fire, and steamed away in apparent comfort. The only departure from their practised routine, which the bleak night and open roof seemed to suggest to them, was that they did not strip themselves naked before coming into the hut, and hang up their vestments in the air to dry, like a votive offering to the god of the sea.

Furniture.

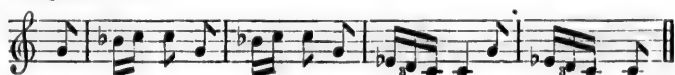
"Their kitchen implements were even more simple than our own. A rude saucer-shaped cup of seal-skin, to gather and hold water in, was the solitary utensil that could be dignified as table-furniture. A flat stone, a fixture of the hut, supported by other stones just above the shoulder-blade of a walrus,—the stone slightly inclined, the cavity of the bone large enough to hold a moss-wick and some blubber; a square block of snow was placed on the stone, and, as the hot smoke circled round it, the seal-skin saucer caught the water that dripped from the edge. They had no vessel for boiling; what they did not eat raw they baked upon a hot stone. A solitary coil of walrus line, fastened to a movable lance-head (noon-ghak), with the well-worn and well-soaked clothes on their backs, completed the inventory of their effects.

"We felt that we were more civilized than our poor cousins, as we fell to work making ourselves comfortable after our own fashion.

The dais was scraped, and its accumulated filth of years removed; a canvas tent was folded double over the dry, frozen stones, our buffalo-bag spread over this, and dry socks and moc-casins were drawn from under our wet overclothes. My copper lamp, a true Berzelius Argand, invaluable for short journeys, soon flamed with a cheerful fire. The soup-pot, the walrus-steak, and the hot coffee, were the next things to be thought of; and, while these were getting ready, an India-rubber floor-cloth was fastened over the gaping entrance of the cave.

"During our long march and its series of ice-fights we had taken care to manifest no weariness, and had, indeed, borne both Ootuniah and Myouk at times upon our shoulders. We showed no signs either of cold, so that all this preparation and rich store of appliances could not be attributed by the Esquimaux to effemina-cy or inferior power. I could see that they were profoundly impressed with a conviction of our superiority, the last feeling which the egotistical self-conceit of savage life admits.

"I felt sure now that they were our more than sworn friends. They sang 'Amna Ayah' for us—their rude, monotonous song—till our ears cracked with the discord, and improvised a special eulogistic chant,



Am - na - yah, Am - na - yah, Am - na - yah, Am - na - yah.

which they repeated over and over again with laughable gravity of utterance, subsiding always into the *refrain* of 'Nalegak! nalegak! nalegak-soak!' 'Captain! captain! great captain!' They nicknamed and adopted all of us as members of their fraternity, with grave and abundant form; reminding me through all their mummerly, solemn and ludicrous at once, of the analogous ceremonies of our North American Indians.

"The chant, and the feed, and the ceremony all completed, Hans, Morton, and myself crawled feet-foremost into our buffalo-bag, and Ootuniah, Awahtok, and Myouk flung themselves outside the skin between us. The last I heard of them or anything else was the renewed chorus of 'Nalegak! nalegak! nalegak-soak!' mingling itself sleepily in my dreams with school-boy memories of Aristophanes and The Frogs. I slept eleven hours.

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XXIX.

Prepara-
tions for
supper.

The
"Amna
Ayah."

A night in
the Igloo

CHAPTER
XXIX.Esqui-
maux
breakfast.

"They were up long before us, and had breakfasted on raw meat cut from a large joint, which lay, without regard to cleanliness, among the deposits on the floor of the igloo. Their mode of eating was ingeniously active. They cut the meat in long strips, introduced one end into the mouth, swallowed it as far as the powers of deglutition would allow, and then, cutting off the protruding portion close to the lips, prepared themselves for a second mouthful. It was really a feat of address: those of us who tried it failed awkwardly; and yet I have seen infants in the mother's hood, not two years old, who managed to perform it without accident."

I pass over the story of the hunt that followed. It had nothing to distinguish it from many others, and I find in my journal of a few days later the fresh narrative of Morton, after he had seen one for the first time.

My next extracts show the progress of our winter arrangements.

Winter
arrange-
ments.

"*September 30, Saturday.*—We have been clearing up on the ice. Our system for the winter has not the dignity of a year ago. We have no Butler Storehouse, no Medary, no Fern Rock, with their appliances. We are ten men in a casemate, with all our energies concentrated against the enemy outside.

Provision
stores.

"Our beef-house is now a pile of barrels holding our water-soaked beef and pork. Flour, beans, and dried apples make a quadrangular blockhouse on the floe; from one corner of it rises our flagstaff, lighting up the dusky grey with its red and white ensign, only on Sunday giving place to the Henry Grinnell flag, of happy memories.

New
London
Avenue.

"From this, along an avenue that opens abeam of the brig,—New London Avenue, named after M'Gary's town at home,—are our boats and square cordage. Outside of all these is a magnificent hut of barrel-frames and snow, to accommodate our Esquimaux visitors—the only thing about it exposed to hazard being the tempting woodwork. What remains to complete our camp-plot is the rope barrier that is to mark out our little curtilage around the vessel; this, when finished, is to be the dividing-line between us and the rest of mankind.

"There is something in the simplicity of all this, 'simplex munditiis,' which might commend itself to the most rigorous taste. Nothing is wasted on ornament.

"*October 4, Wednesday.*—I sent Hans and Hickey two days

ago out to the hunting-ice, to see if the natives have had any luck with the walrus. They are back to-night with bad news,—no meat, no Esquimaux. These strange children of the snow have made a mysterious flitting. Where or how it is hard to guess, for they have no sledges. They cannot have travelled very far; and yet they have such unquiet impulses, that, once on the track, no civilized man can say where they will bring up.

CHAPTER
XXIX.
Disappearance of
the Esquimaux.

"Ohlsen had just completed a sledge, fashioned like the Smith Sound *kommetik*, with an improved curvature of the runners. It weighs only twenty-four pounds, and, though I think it too short for light draught, it is just the article our Etah neighbours would delight in for their land-portages. I intended it for them, as a great price for a great stock of walrus meat; but the other parties to the bargain have flown.

"October 5, *Thursday*.—We are nearly out of fresh meat again, one rabbit and three ducks being our sum total. We have been on short allowance for several days. What vegetables we have—the dried apples and peaches, and pickled cabbage—have lost much of their anti-scorbutic virtue by constant use. Our spices are all gone. Except four small bottles of horse-radish, our carte is comprised in three lines—bread, beef, pork.

Short allowance of food.

"I must be off after these Esquimaux. They certainly have meat, and wherever they have gone we can follow. Once upon their trail, our hungry instincts will not risk being baffled. I will stay only long enough to complete my latest root-beer brewage. Its basis is the big crawling willow, the miniature giant of our Arctic forests, of which we laid in a stock some weeks ago. It is quite pleasantly bitter, and I hope to get it fermenting in the deck-house without extra fuel, by heat from below.

Root-beer brewing.

"October 7, *Saturday*.—Lively sensation, as they say in the land of olives and champagne. 'Nannook, nannook!'—'A bear, a bear!'—Hans and Morton in a breath!

A bear in sight.

"To the scandal of our domestic regulations, the guns were all impracticable. While the men were loading and capping anew, I seized my pillow-companion six-shooter, and ran on deck. A medium-sized bear, with a four months' cub, was in active warfare with our dogs. They were hanging on her skirts, and she with wonderful alertness was picking out one victim after another, snatching him by the nape of the neck, and flinging him many feet,

CHAPTER or rather yards, by a barely perceptible movement of her
XXIX. head.

The dogs
defeated.

"Tudla, our master dog, was already *hors de combat*; he had been tossed twice. Jenny, just as I emerged from the hatch, was making an extraordinary somerset of some eight fathoms, and alighted senseless. Old Whitey, stanch, but not bear-wise, had been the first in the battle; he was yelping in helplessness on the snow.

"It seemed as if the controversy was adjourned; and Nannook evidently thought so; for she turned off to our beef-barre's, and began in the most unconcerned manner to turn them over and nose out their fatness. She was apparently as devoid of fear as any of the bears in the stories of old Barentz and the Spitzbergen voyagers.

Wonderful
strength of
the bear.

"I lodged a pistol-ball in the side of the cub. At once the mother placed her little one between her hind-legs, and, shoving it along, made her way behind the beef-house. Mr. Ohlsen wounded her as she went with my Webster rifle; but she scarcely noticed it. She tore down by single efforts of her forearms the barrels of frozen beef which made the triple walls of the store-house, mounted the rubbish, and snatching up a half barrel of her-rings, carried it down by her teeth, and was making off. It was time to close, I thought. Going up within half pistol range, I gave her six buckshot. She dropped, but instantly rose, and getting her cub into its former position, moved off once more.

New play
of bear
fighting.

"This time she would really have escaped but for the admirable tactics of our new recruits from the Esquimaux. The dogs of Smith's Sound are educated more thoroughly than any of their more southern brethren. Next to the walrus, the bear is the staple of diet to the north, and except the fox, supplies the most important element of the wardrobe. Unlike the dogs we had brought with us from Baffin's Bay, these were trained, not to attack, but to embarrass. They ran in circles round the bear, and when pursued would keep ahead with regulated gait, their comrades effecting a diversion at the critical moment by a nip at her hind-quarters. This was done so systematically and with so little seeming excitement as to strike every one on board. I have seen bear-dogs elsewhere that had been drilled to relieve each other in the *melee* and avoid the direct assault; but here, two dogs without

even a demonstration of attack, would put themselves before the path of the animal, and retreating right and left, lead him into a profitless pursuit that checked his advance completely.

"The poor animal was still backing out, yet still fighting, carrying along her wounded cub, embarrassed by the dogs, yet gaining distance from the brig, when Hans and myself threw in the odds in the shape of a couple of rifle-balls. She staggered in front of her young one, faced us in death-like defiance, and only sank when pierced by six more bullets.

CHAPTER XXIX.
The bear's last struggle.

"We found nine balls in skinning her body. She was of medium size, very lean, and without a particle of food in her stomach. Hunger must have caused her boldness. The net weight of the cleansed carcass was 300 lbs.; that of the entire animal, 650; her length, but 7 feet 8 inches.

Size and weight of the bear.

"Bears in this lean condition are much the most palatable food. The impregnation of fatty oil through the cellular tissue makes a well-fed bear nearly uneatable. The flesh of a famished beast, although less nutritious as a fuel diet, is rather sweet and tender than otherwise.

"The little cub is larger than the adjective implies. She was taller than a dog, and weighs 114 lbs. Like Morton's bear in Kennedy's Channel, she sprang upon the corpse of her mother, and raised a woeful lamentation over her wounds. She repelled my efforts to noose her with great ferocity; but at last, completely muzzled with a line fastened by a running knot between her jaws and the back of her head, she moved off to the brig amid the clamour of the dogs. We have her now chained alongside, but snarling and snapping constantly, evidently suffering from her wound.

The cub a prisoner.

"Of the eight dogs who took part in this passage of arms, only one—'Sneak,' as the men call him, 'Young Whitey,' as he figures in this journal—lost a flower from his chaplet. But two of the rest escaped without a grip.

The dogs after the fight.

"Strange to say, in spite of the powerful flings which they were subjected to in the fight, not a dog suffers seriously. I expected, from my knowledge of the hugging propensity of the plantigrades, that the animal would rear, or at least use her forearm; but she invariably seized the dogs with her teeth, and, after disposing of them for the time, abstained from following up the

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"Jack"
the old
bear dog.

advantage. The Esquimaux assert that this is the habit of the hunted bear. One of our Smith Sound dogs, 'Jack,' made no struggle when he was seized, but was flung, with all his muscles relaxed, I hardly dare to say how far; the next instant he rose and renewed the attack. The Esquimaux both of Proven and of this country say that the dogs soon learn this 'possum-playing' habit. Jack was an old bear-dog.

Bear
habits.

"The bear seems to be more ferocious as he increases his latitude, or more probably as he recedes from the hunting-fields.

"At Oominak, last winter (1852), an Esquimaux and his son were nearly killed by a bear that had housed himself in an iceberg. They attacked him with the lance, but he turned on them and worsted them badly before making his escape.

"But the continued pursuit of man seems to have exerted already a modifying influence upon the ursine character in South Greenland; at all events, the bears there never attack, and even in self-defence seldom inflict injury upon the hunter. Many instances have occurred where they have defended themselves, and even charged after being wounded, but in none of them was life lost. I have myself shot as many as a dozen bears near at hand, and never but once received a charge in return.

"I heard another adventure from the Danes as occurring in 1834:—

An adven-
ture with a
bear.

"A stout Esquimaux, an assistant to the cooper of Upernavik, —not a Christian, but a stout, manly savage,—fired at a she-bear, and the animal closed on the instant of receiving the ball. The man flung himself on the ground, putting forward his arm to protect his head, but lying afterward perfectly motionless. The beast was taken in. She gave the arm a bite or two, but finding her enemy did not move, she retired a few paces and sat upon her haunches to watch. But she did not watch as carefully as she should have done, for the hunter adroitly reloaded his rifle and killed her with the second shot.

Bear liver.

"October 8, Sunday.—When I was out in the *Advance*, with Captain de Haven, I satisfied myself that it was a vulgar prejudice to regard the liver of the bear as poisonous. I ate of it freely myself, and succeeded in making it a favourite dish with the mess. But I find to my cost that it may sometimes be more savoury than safe. The cub's liver was my supper last night,

and to-day I have the symptoms of poison in full measure—
vertigo, diarrhoea, and their concomitants."

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I may mention, in connection with the fact which I have given from my journal, that I repeated the experiment several times afterward, and sometimes, but not always, with the same result. I remember once, near the Great Glacier, all our party sickened after feeding on the liver of a bear that we had killed; and a few weeks afterward, when we were tempted into a similar indulgence, we were forced to undergo the same penance. The animal in both cases was old and fat. The dogs ate to repletion, without injury.

Bear's
liver pol-
sonous.

Another article of diet, less inviting at first, but which I found more innocuous, was the rat. We had failed to exterminate this animal by our varied and perilous efforts of the year before, and a well-justified fear forbade our renewing the crusade. It was marvellous, in a region apparently so unfavourable to reproduction, what a perfect warren we soon had on board. Their impudence and address increased with their numbers. It became impossible to stow anything below decks. Furs, woollens, shoes, specimens of natural history, everything we disliked to lose, however little valuable to them, was gnawed into and destroyed. They harboured among the men's bedding in the fore-castle, and showed such boldness in fight and such dexterity in dodging missiles, that they were tolerated at last as inevitable nuisances. Before the winter ended, I avenged our griefs by decimating them for my private table. I find in my journal of the 10th of October an anecdote that illustrates their boldness:—

Rats on
board.

"We have moved everything movable out upon the ice, and, besides our dividing moss wall between our sanctum and the fore-castle, we have built up a rude barrier of our iron sheathing to prevent these abominable rats from gnawing through. It is all in vain. They are everywhere already, under the stove, in the steward's lockers, in our cushions, about our beds. If I was asked what, after darkness and cold and scurvy, are the three besetting curses of our Arctic sojourn, I should say, RATS, RATS, RATS. A mother-rat bit my finger to the bone last Friday, as I was intruding my hand into a bear-skin mitten which she had chosen as a homestead for her little family. I withdrew it of course with instinctive courtesy; but among them they carried off the mitten before I could suck the finger.

The plague
of rats.

CHAPTER
XXIX.The dog
vanquish-
ed by rats.

"Last week I sent down Rhina, the most intelligent dog of our whole pack, to bivouac in their citadel forward: I thought she might at least be able to defend herself against them, for she had distinguished herself in the bear-hunt. She slept very well for a couple of hours on a bed she had chosen for herself on the top of some iron spikes. But the rats could not or would not forego the horny skin about her paws; and they gnawed her feet and nails so ferociously that we drew her up yelping and vanquished."

Shooting
rats.

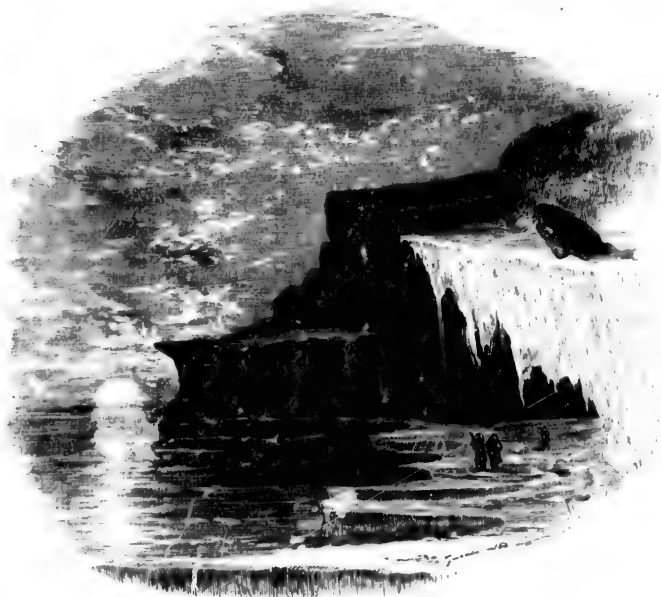
Before I pass from these intrepid and pertinacious visitors, let me add that on the whole I am personally much their debtor. Through the long winter night, Hans used to beguile his lonely hours of watch by shooting them with the bow and arrow. The repugnance of my associates to share with me the table luxury of "such small deer," gave me the frequent advantage of a fresh-meat soup, which contributed no doubt to my comparative immunity from scurvy. I had only one competitor in the dispensation of this *entremet*, or rather one companion; for there was an abundance for both. It was a fox. We caught and domesticated him late in the winter; but the scantiness of our resources, and of course his own, soon instructed him in all the antipathies of a terrier. He had only one fault as a rat-catcher; he would never catch a second till he had eaten the first.

Terrier
fox.Arctic
hares.

At the date of these entries the Arctic hares had not ceased to be numerous about our harbour. They were very beautiful, as white as swans' down, with a crescent of black marking the ear-tips. They feed on the bark and catkins of the willow, and affect the stony sides of the worn down rocks, where they find protection from the wind and snow-drifts. They do not burrow like our hares at home, but squat in crevices or under large stones. Their average weight is about 9 lbs. They would have entered largely into our diet-list but for our Esquimaux dogs, who regarded them with relishing appetite. Parry found the hare at Melville Island, in latitude 75°; but we have traced it from Littleton Island as far north as 79° 08', and its range probably extends still further toward the Pole. Its structure and habits enable it to penetrate the snow-crusts, and obtain food where the reindeer and the musk-ox perish in consequence of the glazed covering of their feeding-grounds.

"October 11, Wednesday.—There is no need of looking at the thermometer and comparing registers, to show how far this season has advanced beyond its fellow of last year. The ice-foot is more easily read, and quite as certain.

CHAPTER
XXIX.
Reaching
the ice-
foot.



THE ICE-FOOT CANOPY.

"The under part of it is covered now with long stalactitic columns of ice, unlike the ordinary icicle in shape, for they have the characteristic bulge of the carbonate-of-lime stalactite. They look like the fantastic columns hanging from the roof of a frozen temple, the dark recess behind them giving all the effect of a grotto. There is one that brings back to me saddened memories of Elephanta and the merry friends that bore me company under its rock-chiselled portico. The fig-trees and the palms, and the gallant major's curries and his old India ale, are wanting in the picture. Sometimes again it is a canopy fringed with gems in the moonlight. Nothing can be purer or more beautiful.

Descrip-
tion of the
canopy.

CHAPTER
XXIX.Search for
the Esqui-
maux.

"The ice has begun to fasten on our brig : I have called a consultation of officers to determine how she may be best secured.

"*October 13, Friday.*—The Esquimaux have not been near us, and it is a puzzle of some interest where they have retreated to. Wherever they are, there must be our hunting-grounds, for they certainly have not changed their quarters to a more destitute region. I have sent Morton and Hans to-day to track them out if they can. They carry a hand-sledge with them, Ohlsen's last manufacture, ride with the dog-sledge as far as Anootok, and leave the old dogs of our team there. From that point they are to try a device of my own. We have a couple of dogs that we got from these same Esquimaux, who are at least as instinctive as their former masters. One of these they are to let run, holding the other by a long leash. I feel confident that the free dog will find the camping-ground, and I think it probable the other will follow. I thought of tying the two together ; but it would embarrass their movements, and give them something to occupy their minds besides the leading object of their mission.

A wolf.

"*October 14, Saturday.*—Mr. Wilson and Hickey reported last night a wolf at the meat-house. Now, the meat-house is a thing of too much worth to be left to casualty, and a wolf might incidentally add some freshness of flavour to its contents. So I went out in all haste with the Marston rifle, but without my mittens and with only a single cartridge. The metal burnt my hands, as metal is apt to do at 50° below the point of freezing ; but I got a somewhat rapid shot. I hit—one of our dogs, a truant from Morton's team ; luckily a flesh-wound only, for he is too good a beast to lose. I could have sworn he was a wolf."

Similarity
of dogs
and
wolves.

There is so much of identical character between our Arctic dogs and wolves, that I am inclined to agree with Mr. Broderip, who in the "Zoological Recreations" assigns to them a family origin. The oblique position of the wolf's eye is not uncommon among the dogs of my team. I have a slut, one of the tamest and most affectionate of the whole of them, who has the long legs and compact body, and drooping tail, and wild, scared expression of the eye, which some naturalists have supposed to characterize the wolf alone. When domesticated early—and it is easy to domesticate him—the wolf follows and loves you like a dog. That they are fond of a loose foot proves nothing : many of our pack will run

away for weeks into the wilderness of ice ; yet they cannot be persuaded when they come back to inhabit the kennel we have built for them only a hundred yards off. They crouch around for the companionship of men. Both animals howl in unison alike : the bell at the settlements of South Greenland always starts them. Their footprint is the same, at least in Smith's Sound. Dr. Richardson's remark to the contrary made me observe the fact, that our northern dogs leave the same "spread track" of the toes when running, though not perhaps as well marked as the wolf's.

The old proverb, and the circumstance of the wolf having sometimes carried off an Esquimaux dog, has been alluded to by the editors of the "Diffusion of Knowledge Library." But this too is inconclusive, for the proverb is false. It is not quite a month ago since I found five of our dogs gluttonizing on the carcasses of their dead companions who had been thrown out on a rubbish-heap ; and I have seen pups only two months old risk an indigestion by overfeeding on their twin brethren who had preceded them in a like imprudence.

Nor is there anything in the supposed difference of strength. The Esquimaux dog of Smith's Sound encounters the wolf fearlessly and with success. The wolves of Northern America never venture near the huts ; but it is well known that when they have been chasing the deer or the moose, the dogs have come up as rivals in the hunt, beaten them off, and appropriated the prey to themselves.

"October 16, Monday.—I have been wearied and vexed for half a day by a vain chase after some bear-tracks. There was a fox evidently following them (*C. lagopus*)."

There are fables about the relation between these two animals which I once thought my observations had confirmed. They are very often found together : the bear striding on ahead with his prey ; the fox behind gathering in the crumbs as they fall ; and I have often seen the parasite licking at the traces of a wounded seal which his champion had borne off over the snow. The story is that the two hunt in couples. I doubt this now, though it is certain that the inferior animal rejoices in his association with the superior, at least for the profits, if not the sympathy it brings to him. I once wounded a bear when I was out with Morton during our former voyage, and followed him for

CHAPTER
XXIX.
Dogs and
wolves.

Bear and
fox.

CHAPTER
XXIX.Strange
com-
paniona.Morton in
search of
the Esqui-
maux.Apparatus
for raising
the brig.

twelve miles over the ice. A miserable little fox travelled close behind his patron, and licked up the blood wherever he lay down. The bear at last made the water ; and, as we returned from our fruitless chase, we saw the fox running at full speed along the edge of the thin ice, as if to rejoin him. It is a mistake to suppose he cannot swim : he does, and that boldly.

"October 19, *Thursday*.—Our black dog Erebus has come back to the brig. Morton has perhaps released him, but he has more probably broken loose.

"I have no doubt Morton is making the best of his way after the Esquimaux. These trips are valuable to us, even when they fail of their immediate object. They keep the natives in wholesome respect for us. We are careful to impress them with our physical prowess, and avoid showing either fatigue or cold when we are travelling together. I could not help being amused some ten days ago with the complacent manner of Myouk, as he hooked himself to me for support after I had been walking for thirty miles ahead of the sledge. The fellow was worth four of me ; but he let me carry him almost as far as the land-ice.

"We have been completing our arrangements for raising the brig. The heavy masses of ice that adhere to her in the winter make her condition dangerous at seasons of low tide. Her frame could not sustain the pressure of such a weight. Our object, therefore, has been to lift her mechanically above her line of flotation, and let her freeze in on a sort of ice-dock ; so that the ice around her as it sinks may take the bottom and hold her up clear of the danger. We have detached four of the massive beams that were intended to resist the lateral pressure of nips, and have placed them as shores, two on each side of the vessel, opposite the channels. Brooks has rigged a crab or capstan on the floe, and has passed the chain cable under the keel at four bearing-points. As these are hauled in by the crab and the vessel rises, the shores are made to take hold under heavy cleats spiked below the bulwarks, and in this manner to sustain her weight.

"We made our first trial of the apparatus to-day. The chains held perfectly, and had raised the brig nearly three feet, when away went one of our chain-slings, and she fell back of course to her more familiar bearings. We will repeat the experiment to-morrow, using six chains, two at each line of stress.

"October 21, *Saturday*.—Hard at it still, slinging chains and planting shores. The thermometer is too near zero for work like this. We swaddle our feet in old cloth, and guard our hands with fur mits; but the cold iron bites through them all.

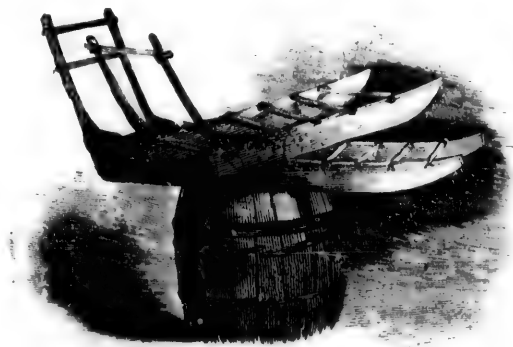
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"6.30 P.M.—Morton and Hans are in, after tracking the Esquimaux to the lower settlement of Etah. I cannot give their report to-right: the poor fellows are completely knocked up by the hardships of their march. Hans, who is always careless of powder and fire-arms,—a trait which I have observed among both the American and the Oriental savages,—exploded his powder-flask while attempting to kindle a tinder-fire. The explosion has risked his hand. I have dressed it, extracting several pieces of foreign matter, and poulticing it in yeast and charcoal. Morton has frostbitten both his heels; I hope not too severely, for the indurated skin of the heel makes it a bad region for suppuration. But they bring us two hundred and seventy pounds of walrus-meat and a couple of foxes. This supply, with what we have remaining of our two bears, must last us till the return of daylight allows us to join the natives in their hunts.

Sufferings
of Morton
and Hans.

"The light is fast leaving us. The sun has ceased to reach the vessel. The north-eastern headlands or their southern faces up the fiords have still a warm yellow tint, and the pinnacles of the icebergs far out on the flocs are lighted up at noonday; but all else is dark shadow."

Departure
of the
light.



OUR GREENLAND SLEDGE.

CHAPTER XXX.

JOURNEY OF MORTON AND HANS—RECEPTION—THE HUT—THE WALRUS—
WALRUS-HUNT—THE CONTEST—HABITS OF WALRUS—FEROCITY OF THE
WALRUS—THE VICTORY—THE JUBILEE—A SIPAK.

JOURNEY OF MORTON AND HANS.

CHAPTER XXX. MORTON reached the huts beyond Anoatok upon the fourth day after leaving the brig.

Esqui-
maux
settle-
ment.

The little settlement is inside the north-eastern islands of Hartstene Bay, about five miles from Gray's Fiord, and some sixty-five or seventy from our brig. The slope on which it stands fronts the south-west, and is protected from the north and north-east by a rocky island and the hills of the mainland.

There were four huts; but two of them are in ruins. They were all of them the homes of families only four winters ago. Of the two which are still habitable, Myouk, his father, mother, brother and sister occupied one; and Awahtok and Ootuniah, with their wives and three young ones, the other. The little community had lost two of its members by death since the spring.

Morton's
reception.

They received Morton and his companion with much kindness, giving them water to drink, rubbing their feet, drying their moccasins, and the like. The women, who did this with something of the good-wife's air of prerogative, seemed to have toned down much of the rudeness which characterized the bachelor settlement at Anoatok. The lamps were cheerful and smokeless, and the huts much less filthy. Each had its two lamp-fires constantly burning, with a framework of bone hooks and walrus-line above them for drying the wet clothes of the household. Except a few dog-skins, which are used as a support to the small of the back, the dais was destitute of sleeping accommodations altogether: a single walrus-hide was spread out for Morton and Hans. The hut had the usual tossut, at least 12 feet long,—very low, straight, and level, until it reached the inner part of the chamber, when it rose abruptly by a small hole, through which with some squeezing was the entrance into the true apartment. Over this entrance was the rude window,

with its scraped seal-intestine instead of glass, heavily coated with frost of course ; but a small eye-hole commanding the bay enabled the indwellers to peep out and speak or call to any who were outside. A smoke-hole passed through the roof.

When all the family, with Morton and Hans, were gathered together, the two lamps in full blaze and the narrow hole of entrance covered by a flat stone, the heat became insupportable. Outside, the thermometer stood at 30° below zero ; within, 90° above ; a difference of 120°.

Insupportable heat in the hut.

The vermin were not as troublesome as in the Anootok dormitory, the natives hanging their clothing over the lamp-frames, and lying down to sleep perfectly naked, with the exception of a sort of T bandage, as surgeons call it, of seal-skin, three inches wide, worn by the women as a badge of their sex, and supported by a mere strip around the hips.

After sharing the supper of their hosts,—that is to say, after disposing of six frozen auks apiece,—the visitors stretched themselves out and passed the night in unbroken perspiration and slumber. It was evident from the meagreness of the larder that the hunters of the family had work to do ; and from some signs, which did not escape the sagacity of Morton, it was plain that Myouk and his father had determined to seek their next dinner upon the floes. They were going upon a walrus-hunt ; and Morton, true to the mission with which I had charged him, invited himself and Hans to be of the party.

Night in the hut.

I have not yet described one of these exciting incidents of Esquimaux life. Morton was full of the one he witnessed ; and his account of it when he came back was so graphic, that I should be glad to escape from the egotism of personal narrative by giving it in his own words. Let me first, however, endeavour to describe the animal.

The specimens in the museums of collectors are imperfect, on account of the drying of the skin of the face against the skull. The head of the walrus has not the characteristic oval of the seal ; on the contrary, the frontal bone is so covered as to present a steep descent to the eyes and a square, blocked-out aspect to the upper face. The muzzle is less protruding than the seal's, and the cheeks and lips are completely masked by the heavy quill-like bristles. Add to this the tusks as a garniture to the lower face ; and you

Description of the walrus.

CHAPTER

XXX.

have for the walrus a grim, ferocious aspect peculiarly his own. I have seen him with tusks nearly 30 inches long ; his body not less than 18 feet. When of this size he certainly reminds you of the elephant more than any other living monster.

Resemblance of the walrus to man.

The resemblance of the walrus to man has been greatly overrated. The notion occurs in our systematic treatises, accompanied with the suggestion that this animal may have represented the merman and mermaid. The square, blocked-out head which I have noticed, effectually destroys the resemblance to humanity when distant, and the colossal size does the same when near. Some of the seals deserve the distinction much more : the size of the head, the regularity of the facial oval, the droop of the shoulders, even the movements of this animal, whether singly or in group, remind you strikingly of man.

Hunting party.

The party which Morton attended upon their walrus hunt had three sledges. One was to be taken to a cache in the neighbourhood ; the other two dragged at a quick run toward the open water, about ten miles off to the south-west. They had but nine dogs to these two sledges, one man only riding, the others running by turns. As they neared the new ice, and where the black wastes of mingled cloud and water betokened the open sea, they would from time to time remove their hoods and listen intently for the animal's voice.

Bellow of the walrus.

After a while Myouk became convinced, from signs or sounds, or both,—for they were inappreciable by Morton,—that the walrus were waiting for him in a small space of recently-open water that was glazed over with a few day's growth of ice ; and moving gently on, they soon heard the characteristic bellow of a bull awuk. The walrus, like some of the higher order of beings to which he has been compared, is fond of his own music, and will lie for hours listening to himself. His vocalization is something between the mooing of a cow and the deepest baying of a mastiff : very round and full, with its barks or detached notes repeated rather quickly seven to nine times in succession.

The party now formed in single file, following in each other's steps ; and, guided by an admirable knowledge of ice-topography, wound behind hummocks and ridges in a serpentine approach toward a group of pond-like discolourations, recently-frozen ice-spots, but surrounded by firmer and older ice.

When within half a mile of these, the line broke, and each man CHAPTER XXX. crawled toward a separate pool—Morton on his hands and knees following Myouk. In a few minutes the walrus were in sight. They were five in number, rising at intervals through the ice in a body, and breaking it up with an explosive puff that might have been heard for miles. Two large grim-looking males were conspicuous as the leaders of the group.

Now for the marvel of the craft. When the walrus is above The hunter's craft. water, the hunter is flat and motionless; as he begins to sink, alert and ready for a spring. The animal's head is hardly below the water-line before every man is in a rapid run; and again, as if by instinct, before the beast returns, all are motionless behind protecting knolls of ice. They seem to know beforehand not only the time he will be absent, but the very spot at which he will re-appear. In this way, hiding and advancing by turns, Myouk, with Morton at his heels, has reached a plate of thin ice, hardly strong enough to bear them, at the very brink of the water-pool the walrus are curvetting in.

Myouk, till now phlegmatic, seems to waken with excitement. Excitement of the chase His coil of walrus-hide, a well-trimmed line of many fathoms' length, is lying at his side. He fixes one end of it in an iron barb, and fastens this loosely by a socket upon a shaft of unicorn's horn; the other end is already looped, or, as sailors would say, "doubled in a bight." It is the work of a moment. He has grasped the harpoon: the water is in motion. Puffing with pent-up respiration, the walrus is within a couple of fathoms close before him. Myouk rises slowly—his right arm thrown back, the left flat at his side. The walrus looks about him, shaking the water from his crest; Myouk throws up his left arm, and the animal, rising breast-high, fixes one look before he plunges. It has cost him all that curiosity can cost; the harpoon is buried under his left The walrus struck. flipper.

Though the awuk is down in a moment, Myouk is running at desperate speed from the scene of his victory, paying off his coil freely, but clutching the end by its loop. He seizes as he runs a small stick of bone, rudely pointed with iron, and by a sudden movement drives it into the ice; to this he secures his line, pressing it down close to the ice-surface with his feet.

Now comes the struggle. The hole is dashed in mad commo-

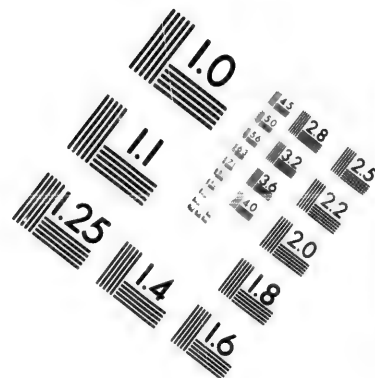
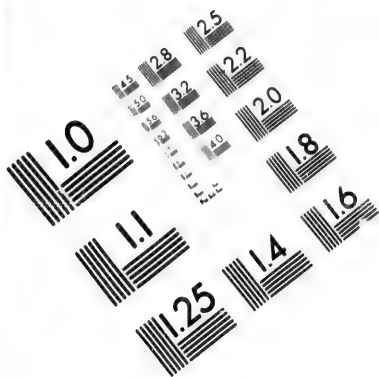
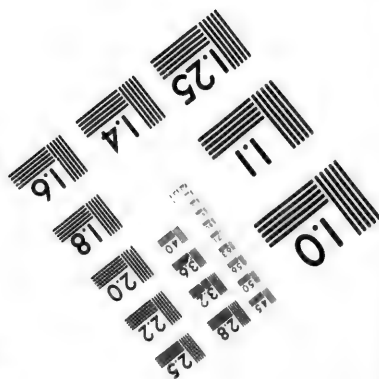
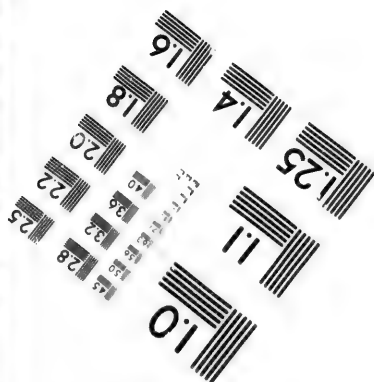
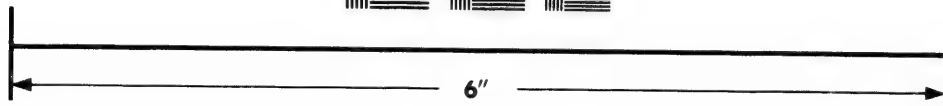
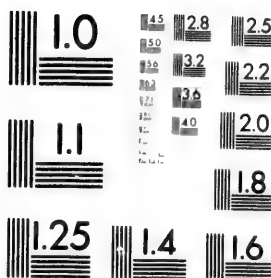


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CHAPTER

XXX.

The
struggle.

tion with the struggles of the wounded beast; the line is drawn tight at one moment, the next relaxed: the hunter has not left his station. There is a crash of the ice; and rearing up through it are two walruses, not many yards from where he stands. One of them, the male, is excited and seemingly terrified; the other, the female, collected and vengeful. Down they go again, after one grim survey of the field; and on the instant Myouk has changed his position, carrying his coil with him and fixing it anew.

He has hardly fixed it before the pair have again risen, breaking up an area of ten feet diameter about the very spot he left. As they sink once more he again changes his place. And so the conflict goes on between address and force, till the victim, half exhausted, receives a second wound, and is played like a trout by the angler's reel.

Instinct
of the
walrus.

The instinct of attack which characterizes the walrus is interesting to the naturalist, as it is characteristic also of the land animals, the pachyderms, with which he is classed. When wounded, he rises high out of the water, plunges heavily against the ice, and strives to raise himself with his fore-flippers upon its surface. As it breaks under his weight, his countenance assumes a still more vindictive expression, his bark changes to a roar, and the foam pours out from his jaws till it froths his beard.

Uses of
the tusks.

Even when not excited, he manages his tusks bravely. They are so strong that he uses them to grapple the rocks with, and climbs steeples of ice and land which would be inaccessible to him without their aid. He ascends in this way rocky islands that are sixty and a hundred feet above the level of the sea; and I have myself seen him in these elevated positions basking with his young in the cool sunshine of August and September.

He can strike a fearful blow; but prefers charging with his tusks in a soldierly manner. I do not doubt the old stories of the Spitzbergen fisheries and Cherie Is' ad, where the walrus puts to flight the crowds of European boats. Awuk is the lion of the Danish Esquimaux, and they always speak of him with the highest respect.

I have heard of oomiaks being detained for days at a time at the crossings of straits and passages which he infested. Governor Flaischer told me that, in 1830, a brown walrus, which, according

to the Esquimaux, is the fiercest, after being lanced and maimed near Upernavik, routed his numerous assailants, and drove them in fear to seek for help from the settlement. His movements were so violent as to jerk out the harpoons that were stuck into him. The governor slew him with great difficulty after several rifle-shots and lance-wounds from his whaleboat.

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XXX.

On another occasion, a young and adventurous Inuit plunged his nailegit into a brown walrus; but, startled by the savage demeanour of the beast, called for help before using the lance. The older men in vain cautioned him to desist. "It is a brown walrus," said they: "*Aûvek-Kaiok!*" "Hold back!" Finding the caution disregarded, his only brother rowed forward and plunged the second harpoon. Almost in an instant the animal charged upon the kayacker, ripping him up, as the description went, after the fashion of his sylvan brother, the wild boar. The story was told to me with much animation; how the brother remaining rescued the corpse of the brother dead; and how, as they hauled it up on the ice-floes, the ferocious beast plunged in foaming circles, seeking fresh victims in that part of the sea which was discoloured by his blood.

The Inuit
and the
walrus.

Some idea may be formed of the ferocity of the walrus, from the fact that the battle which Morton witnessed, not without sharing some of its danger, lasted four hours—during which the animal rushed continually at the Esquimaux as they approached, tearing off great tables of ice with his tusks, and showing no indications of fear whatever. He received upward of seventy lance wounds, —Morton counted over sixty; and even then he remained hooked by his tusks to the margin of the ice, unable or unwilling to retire. His female fought in the same manner, but fled on receiving a lance-wound.

Ferocity
of the
walrus.

The Esquimaux seemed to be fully aware of the danger of venturing too near; for at the first onset of the walrus they jumped back far enough to be clear of the broken ice. Morton described the last three hours as wearing, on both sides, the aspect of an unbroken and seemingly doubtful combat.

The method of landing the beast upon the ice, too, showed a great deal of clever contrivance. They made two pair of incisions in the neck, where the hide is very thick, about six inches apart and parallel to each other, so as to form a couple of bands. A

a Method of
landing
the beast
on the ice

CHAPTER
XXX.

line of cut hide, about a quarter of an inch in diameter, was passed under one of these bands and carried up on the ice to a firm stick well secured in the floe, where it went through a loop, and was then taken back to the animal, made to pass under the second band, and led off to the Esquimaux. This formed a sort of "double purchase," the blubber so lubricating the cord as to admit of a free movement. By this contrivance the beast, weighing some seven hundred pounds, was hauled up and butchered at leisure.

A grand
ice-house.

The two sledges now journeyed homeward, carrying the more valued parts of their prize. The intestines and a large share of the carcass were buried up in the cavities of a berg; Lucullus himself could not have dreamed of a grander icehouse.

Division of
the game.

As they doubled the little island which stood in front of their settlement, the women ran down the rocks to meet them. A long hail carried the good news; and, as the party alighted on the beach, knives were quickly at work, the allotment of the meat being determined by well-understood hunter laws. The Esquimaux, however gluttonously they may eat, evidently bear hunger with as little difficulty as excess. None of the morning party had breakfasted; yet it was after ten o'clock at night before they sat down to dinner. "Sat down to dinner!" This is the only expression of our own gastrology which is applicable to an Esquimaux feast. They truly sit down, man, woman, and child, knife in hand, squatting cross-legged around a formidable joint,—say forty pounds, —and, without waiting for the tardy coction of the lamp, falling to like college commoners after grace. I have seen many such feeds. Hans's account, however, of the glutton-festival at Etah is too characteristic to be omitted:—

Glutton
festival at
Etah.

"Why, Cappen Ken, sir, even the children ate all night; you know the little two-year-old that Awiu carried in her hood—the one that bit you when you tickled it? Yes. Well, Cappen Ken, sir, that baby cut for herself, with a knife made out of an iron hoop, and so heavy that it could barely lift it, and cut and ate, and ate and cut, as long as I looked at it."

"Well, Hans, try now and think; for I want an accurate answer: how much as to weight or quantity would you say that child ate?" Hans is an exact and truthful man: he pondered a little and said that he could not answer my question. "But I

know this, sir, that it ate a *sipak*—the Esquimaux name for the lump which is cut off close to the lips—"as large as its own head; and three hours afterward, when I went to bed, it was cutting off another lump and eating still." A *sipak*, like the Dutch governor's foot, is, however, a varying unit of weight.

CHAPTER
XXX.



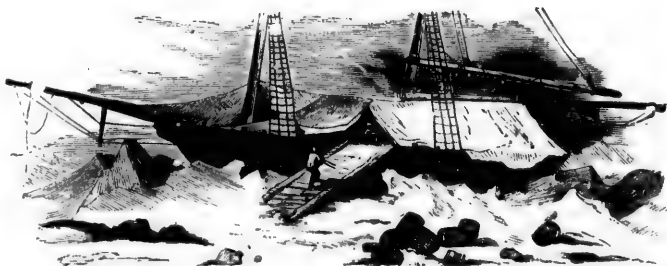
CHAPTER XXXI.

AN AURORA—WOOD-CUTTING—FUEL ESTIMATE—THE STOVE-PIPES—THE ARCTIC FIRMAMENT—ESQUIMAUX ASTRONOMY—HEATING APPARATUS—METEORIC SHOWER—A BEAR—HASTY RETREAT—THE CABIN BY NIGHT—SICKNESS INCREASING—CUTTING INTO THE BRIG—THE NIGHT WATCH.

CHAPTER
XXXI.

The raising of the brig.

"October 24, Tuesday.—We are at work that makes us realize how short-handed we are. The brig was lifted for the third time to-day, with double chains passed under her at low tide, both astern and amid-ships. Her bows were already raised three feet above the water, and nothing seemed wanting to our complete success, when at the critical moment one of the after-shores parted, and she fell over about five streaks to starboard. The slings were hove-to by the crab, and luckily held her from going further, so that she now stands about three feet above her flotation-line, drawing four feet forward, but four and a half aft. She has righted a little with the return of tide, and now awaits the freezing-in of her winter cradle. She is well out of water; and, if the chains only hold, we shall have the spectacle of a brig, high and dry, spending an Arctic winter over an Arctic ice-bed.



THE BRIG CRADLED.

"We shall be engaged now at the hold and with the housing on deck. From our lodge-room to the forward timbers everything is clear already. We have moved the carpenter's bench into our

little dormitorium; everywhere else it is too cold for handling tools. CHAPTER XXXI.

"9 P.M.—A true and unbroken auroral arch—the first we have seen in Smith's Sound. It was colourless, but extremely bright. There was no pendant from the lower curve of the arc; but from its outer, an active wavy movement, dissipating itself into barely-perceptible cirrus, was broken here and there by rays nearly perpendicular, with a slight inclination to the east. The atmosphere was beautifully clear. AN AURORA.

"October 26, *Thursday*.—The thermometer at 34° below zero, but fortunately no wind blowing. We go on with the out-door work. The gangway of ice is finished, and we have passed wooden steam-tubes through the deck-house, to carry off the vapours of our cooking-stove and the lighter impurities of the crowded cabin. Out-door work.

"We burn but seventy pounds of fuel a day, most of it in the galley—the fire being allowed to go out between meals. We go without fire altogether for four hours of the night; yet such is the excellence of our moss walls and the air-proof of our tossut, that the thermometer in-doors never indicates less than 45° above zero, with the outside air at 30° below. When our housing is arranged, and the main hatch secured with a proper weather-tight screen of canvas, we shall be able, I hope, to meet the extreme cold of February and March without fear. Comparative warmth outside and in.

"Darkness is the worst enemy we have to face; but we will strive against the scurvy in spite of him, till the light days of sun and vegetation. The spring-hunt will open in March, though it will avail us very little till late in April.

"Wilson and Brooks are my principal subjects of anxiety; for although Morton and Hans are on their backs, making four of our ten, I can see strength of system in their cheerfulness of heart. The best prophylactic is a hopeful, sanguine temperament; the best cure, moral resistance—that spirit of combat against every trial which is alone true bravery. Anxieties

"October 27, *Friday*.—The work is going on; we are ripping off the extra planking of our deck for fuel during the winter. The cold increases fast, verging now upon 40° below zero, and in spite of all my efforts we will have to burn largely into the brig. I prepared for this two months ago, and satisfied myself, after a consultation with the carpenter, that we may cut away some seven or Fuel for winter.

CHAPTER
XXXI.Fuel esti-
mate.

eight tons of fuel without absolutely destroying her sea-worthiness. Ohlsen's report marked out the order in which her timbers should be appropriated to uses of necessity: 1. The monkey-rail; 2. The bulwarks; 3. The upper ceiling of the deck; 4. Eight extra cross-beams; 5. The flooring and remaining wood-work of the fore-castle; 6. The square girders of the forepeak; 7. The main-top-sail-yard and top-mast; 8. The outside trebling or oak sheathing.

"We had then but thirty buckets of coal remaining, and had already burnt up the bulkheads. Since then we have made some additional inroads on our stock; but, unless there is an error in the estimate, we can go on at the rate of seventy pounds a day. Close house-keeping this; but we cannot do better. We must remodel our heating arrangements. The scurvy exacts a comfortable temperature and a drying one. Our mean thus far has been 47°—decidedly too low; and by the clogging of our worn-out pipe it is now reduced to 42°.

"The ice-belt, sorry chronicler of winter progress, has begun to widen with the rise and fall of the sludgy water.

"October 31, *Tuesday*.—We have had a scene on board. We play many parts on this Arctic stage of ours, and can hardly be expected to be at home in all of them.

Cleaning
and re-
pairing
the stoves.

"To-day was appropriated to the reformation of the stoves, and there was demand, of course, for all our ingenuity both as tinkers and chimney sweeps. Of my company of nine, Hans had the good luck to be out on the hunt, and Brooks, Morton, Wilson, and Good-fellow, were scurvy-ridden in their bunks. The other four and the commanding officer made up the detail of duty. First, we were to give the smoke-tubes of the stove a thorough cleansing, the first they have had for now seventeen months; next, to reduce our *fete* snow-melter to its elements of imperfect pipes and parts; and last, to combine the practicable remains of the two into one efficient system for warming and melting.

"Of these, the first has been executed most gallantly. 'Glory enough for one day!' The work with the scrapers on the heated pipes—for the accumulation inside of them was as hard as the iron itself till we melted it down—was decidedly unpleasant to our gentle senses; and we were glad when it had advanced far enough to authorize a resort to the good old-fashioned country custom of firing. But we had not calculated the quantity of the gases, com-

bustible and incombustible, which this process was to evolve, with duly scientific reference to the size of their outlet. In a word, they were smothering us, and, in a fit of desperation, we threw open our apartment to the atmosphere outside. This made short work of the smoky flocculi; the dormitory decked itself on the instant with a frosty forest of feathers, and it now rejoices in a drapery as grey as a cygnet's breast.

"It was cold work reorganizing the stove for the nonce; but we have got it going again, as red as a cherry, and my well-worn dog-skin suit is drying before it. The blackened water is just beginning to drip, drip, drop, from the walls and ceiling, and the bed-clothes and the table on which I write."

My narrative has reached a period at which everything like progress was suspended. The increasing cold and brightening stars, the labours, and anxieties, and sickness that pressed upon us,—these almost engross the pages of my journal. Now and then I find some marvel of Petersen's about the fox's dexterity as a hunter; and Hans tells me of domestic life in South Greenland, or of a seal-hunt and a wrecked kayak; or perhaps M'Gary repeats his thrice-told tale of humour; but the night has closed down upon us, and we are hibernating through it.

Yet some of these were topics of interest. The intense beauty of the Arctic firmament can hardly be imagined. It looked close above our heads, with its stars magnified in glory, and the very planets twinkling so much as to baffle the observations of our astronomer. I am afraid to speak of some of these night-scenes. I have trodden the deck and the floes, when the life of earth seemed suspended, its movements, its sounds, its colouring, its companionships; and as I looked on the radiant hemisphere, circling above me as if rendering worship to the unseen Centre of light, I have ejaculated in humility of spirit, "Lord, what is man that thou art mindful of him?" And then I have thought of the kindly world we had left, with its revolving sunshine and shadow, and the other stars that gladden it in their changes, and the hearts that warmed to us there, till I lost myself in memories of those who are not—and they bore me back to the stars again.

The Esquimaux, like other nomads, are careful observers of the heavenly bodies. An illustration of the confidence with which

CHAPTER

XXXI.

Extreme
discom-
fort.Progress
suspended,
night
closed in.Beauty of
the Arctic
firma-
ment.

CHAPTER they avail themselves of this knowledge occurred while Petersen's
XXXI. party were at Tessieusak. I copy it from my journal of November 6.

Esqui-
maux
astro-
nomy.

"A number of Esquimaux sought sleeping-quarters in the hut, much to the annoyance of the earlier visitors. The night was clear; and Petersen, anxious to hasten their departure, pointed to the horizon, saying it would soon be daylight. 'No,' said the savage; 'when that star there gets round to that point,' indicating the quarter of the heavens, 'and is no higher than this star,' naming it, 'will be the time to harness up my dogs.' Petersen was astounded; but he went out the next morning and verified the sidereal fact.

Esqui-
maux ob-
servation
of the
seasons
and winds.

"I have been shooting a hare to-day up the ravine pointed out by Ootuniah. It has been quite a pleasant incident. I can hardly say how valuable the advice of our Esquimaux friends has been to us upon our hunts. This desert homestead of theirs is as thoroughly travelled over as a sheepwalk. Every movement of the ice, or wind, or season is noted; and they predict its influence upon the course of the birds of passage with the same sagacity that has taught them the habits of the resident animals.

"They foretold to me the exact range of the water off Cape Alexander during September, October, November, and December, and anticipated the excessive fall of snow which has taken place this winter, by reference to this mysterious water.

Their in-
scrutable
means of
discover-
ing water.

"In the darkest weather of October, when everything around is apparently congealed and solid, they discover water by means as inscrutable as the divining-rod. I was once journeying to Anokatok, and completely enveloped in darkness among the rolled-ice off Godsend Island. My dogs were suffering for water. September was half gone, and the water-streams both on shore and on the bergs had been solid for nearly a fortnight. Myouk, my companion, began climbing the dune-like summits of the ice-hills, tapping with his ice-pole and occasionally applying his ear to parts of the surface. He did so to three hills without any result, but at the fourth he called out, 'Water!' I examined the spot by hand and tongue, for it was too dark to see; but I could detect no liquid. Lying down and listening, I first perceived the metallic tinkle of a rivulet. A few minutes' digging brought us down to a scanty infiltration of drinkable water.

"November 8, *Wednesday*.—Still tinkering at our stove and ice-melter ; at last successful. Old iron pipes, and tin kettles, and all the refuse kitchen-ware of the brig figure now in picturesque association, and rejoice in the title of our heating apparatus. It is a great result. We have burnt from 6 A.M. to 10 P.M. but seventy-five pounds, and will finish the twenty-fours with fifteen pounds more. It has been a mild day, the thermometer keeping some tenths above 13° below zero ; but then we have maintained a temperature inside of 55° above. With our old contrivances we could never get higher than 47°, and that without any certainty, though it cost us a hundred and fifty-four pounds a day. A vast increase of comfort, and still greater saving of fuel. This last is a most important consideration. Not a stick of wood comes below without my eyes following it through the scales to the wood-stack. I weigh it to the very ounce.

CHAPTER
XXXI.
Heating
apparatus.

"The tide-register, with its new wheel-and-axle arrangements, has given us out-door work for the day. Inside, after rigging the stove, we have been busy chopping wood. The ice is already three feet thick at our tide-hole.

"November 15, *Wednesday*.—The last forty-eight hours should have given us the annual meteoric shower. We were fully prepared to observe it ; but it would not come off. It would have been a godsend variety. In eight hours that I helped to watch, from nine of last night until five this morning, there were only fifty-one shooting stars. I have seen as many between the same hours in December and February of last winter.

Meteoric
shower.

"Our traps have been empty for ten days past ; but for the pittance of excitement which the visit to them gives, we might as well be without them.

"The men are getting nervous and depressed. McGary paced the deck all last Sunday in a fit of home-sickness, without eating a meal. I do my best to cheer them ; but it is hard work to hide one's own trials for the sake of others who have not as many. I am glad of my professional drill and its companion influence over the sick and toil-worn. I could not get along at all unless I combined the offices of physician and commander. You cannot punish sick men.

Depression
and home-
sickness.

"November 20, *Monday*.—I was out to-day looking over the empty traps with Hans, and when about two miles off the brig—

CHAPTER
XXXI.A bear on
the ice.

luckily not more—I heard what I thought was the bellow of a walrus on the floe-ice. ‘Hark there, Hans!’ The words were scarcely uttered before we had a second roar, altogether unmistakable. No walrus at all : a bear, a bear ! We had jumped to the ice-foot already. The day was just thirty minutes past the hour of noon ; but, practised as we all are to see through the darkness, it was impossible to make out an object two hundred yards off. What to do?—we had no arms.

“ We were both of us afraid to run, for we knew that the sight of a runner would be the signal for a chase ; and, besides, it went to our hearts to lose such a providential accession to our means of life. A second roar, well pitched and abundant in volume, assured us that the game was coming nearer, and that he was large and of no doubt corresponding flavour. ‘Run for the brig, Hans,’—he is a noble runner,—‘and I will play decoy.’ Off went Hans like a deer. Another roar ; but he was already out of sight.

Unpleasant
sus-
pense.

“ I may confess it to these well-worn pages ; there was something not altogether pleasant in the silent communings of the next few minutes ; but they were silent ones.

“ I had no stimulus to loquacity, and the bear had ceased to be communicative. The floe was about three-quarters of a tide ; some ten feet it may be, lower than the ice-foot on which I lay. The bear was of course below my horizon. I began after a while to think over the reality of what I had heard, and to doubt whether it might not be after all a creature of the brain. It was very cold on that ice-foot. I resolved to crawl to the edge of it and peer under my hands into the dark shadow of the hummock-ridges.

“ I did so. One look ; nothing. A second ; no bear after all. A third ; what is that long rounded shade ! Stained ice ? Yes ; stained ice. The stained ice gave a gross menagerie roar, and charged on the instant for my position. I had not even a knife, and did not wait to think what would have been appropriate if I had had one. I ran,—ran as I never expect these scurvy-stiffened knees to run again,—throwing off first one mitten and then its fellow to avoid pursuit. I gained the brig, and the bear my mittens. I got back one of them an hour afterward, but the other was carried off as a trophy in spite of all the rifles we could bring to the rescue.”

A run for
life.

“ *November 24, Friday.*—The weather still mild. I attempted

to work to-day at charting. I placed a large board on our stove, and pasted my paper to it. My lamp reposed on the lid of the coffee-kettle, my instruments in the slush-boiler, my feet in the ashpan; and thus I drew the first coast-line of Grinnell Land. The stove, by close watching and niggard feeding, has burnt only sixty-five pounds in the last twenty-four hours. Of course, working by night I work without fire. In the daytime our little company take every man his share of duty as he is able. Poor Wilson, just able to stump about after his late attack of scurvy, helps to wash the dishes. Morton and Brooks sew at sledge-clothing, while Kiley, McGary, and Ohlsen, our only really able-bodied men, cut the ice and firewood.

CHAPTER
XXXI.Division of
labour.

"December 1, Friday.—I am writing at midnight. I have the watch from eight to two. It is day in the moonlight on deck, the thermometer getting up again to 36° below zero. As I come down to the cabin—for so we still call this little moss-lined igloo of ours—every one is asleep, snoring, gritting his teeth, or talking in his dreams. This is pathognomonic; it tells of Arctic winter and its companion, scurvy. Tom Hickey, our good-humoured, blundering cabin-boy, decorated since poor Schubert's death with the dignities of cook, is in that little dirty cot on the starboard side; the rest are bedded in rows, Mr. Brooks and myself chock aft. Our bunks are close against the frozen moss wall, where we can take in the entire family at a glance. The apartment measures twenty feet by eighteen; its height six feet four inches at one place, but diversified elsewhere by beams crossing at different distances from the floor. The avenue by which it is approached is barely to be seen in the moss wall forward; twenty feet of air-tight space make misty distance, for the puff of outside-temperature that came in with me has filled our atmosphere with vesicles of vapour. The avenue—Ben-Djerback is our poetic name for it—closes on the inside with a door well patched with flannel, from which, stooping upon all-fours, you back down a descent of four feet in twelve through a tunnel three feet high and two feet six inches broad. It would have been a tight squeeze for a man like Mr. Brooks when he was better fed and fatter. Arrived at the bottom, you straighten yourself, and a second door admits you into the dark and sorrowing hold, empty of stores, and stripped to its naked ceiling for firewood. From this we grope

Writing at
midnight.Description
tion of the
igloo on
board.

CHAPTER XXXI. OUR way to the main hatch, and mount by a rude stairway of boxes into the open air.

Sickness
increasing.

"December 2, *Saturday*.—Had to put Mr. M'Gary and Riley under active treatment for scurvy. Gums retracted, ankles swollen, and bad lumbago. Mr. Wilson's case, a still worse one, has been brought under. Morton's is a saddening one; I cannot afford to lose him. He is not only one of my most intelligent men, but he is daring, cool, and everyway trustworthy. His tendon Achilles has been completely perforated, and the surface of the heel-bone exposed. An operation in cold, darkness, and privation, would probably bring on locked-jaw. Brooks grows discouraged: the poor fellow has scurvy in his stump, and his leg is drawn up by the contraction of the flexors at the knee-joint. This is the third case on board—the fourth, if I include my own—of contracted tendons.

Inade-
quate
provision
of fuel.

"December 3, *Sunday*.—I have now on hand twenty-four hundred pounds of chopped wood, a store collected with great difficulty; and yet, how inadequate a provision for the sickness and accident we must look for through the rest of the dark days! It requires the most vigorous effort of what we call a healthy man to tear from the oak ribs of our stout little vessel a single day's firewood. We have but three left who can manage even this; and we cannot spare more than one for the daily duty. Two thousand pounds will barely carry us to the end of January, and the two severest months of the Arctic year, February and March, will still be ahead of us.

"To carry us over these, our days of greatest anticipated trial, we have the outside oak sheathing,—or trebling, as the carpenters call it,—a sort of extra skin to protect the brig against the shocks of the ice. Although nearly three inches thick, it is only spiked to her sides, and carpenter Ohlsen is sure that its removal will not interfere with her sea-worthiness. Cut the trebling only to the water-line, and it will give me at least two and a half tons; and with this—God willing—I may get through this awful winter, and save the brig besides!

Effect of
the smoke.

"December 4, *Monday*.—That stove is smoking so that three of our party are down with acute inflammation of the eyes. I fear I must increase the diameter of our smoke-pipes, for the pitch-pine which we burn, to save up our oak for the greater cold, is redundantly charged with turpentine. Yet we do not want an

increased draught to consume our seventy pounds ; the fiat, 'No more wood' comes soon enough.

CHAPTER
XXXI.

"Then for the night-watch. I have generally something on hand to occupy me, and can volunteer for the hours before my regular term. Everything is closed tight ; I muffle myself in furs, and write ; or, if the cold denies me that pleasure, I read, or at least think. ~~Thank Heaven, even an Arctic temperature leaves the mind unchilled.~~ But in truth, though our hourly observations in the air range between -46° and -30° , we seldom register less than $+36^{\circ}$ below.

The night
watch.

"*December 5, Tuesday.*—M'Gary is no better, but happily has no notion how bad he is. I have to give him a grating of our treasured potatoes. He and Brooks will doubtless finish the two I have got out, and then there will be left twelve. They are now three years old, poor old frozen memorials of the dear land they grew in. They are worth more than their weight in gold."

Value of
potatoes



KAYACK, OR GREENLANDER'S CANOE.

CHAPTER XXXII.

~~ESQUIMAUX SLEDGES—BONSALL'S RETURN—RESULTS OF THE HUNT—RETURN
OF WITHDRAWING PARTY—THEIR RECEPTION—THE ESQUIMAUX ESCORT
—CONFERENCE—CONCILIATION—ON FIRE—CASUALTY—CHRISTMAS—
OLE BEN—A JOURNEY AHEAD—SETTING OUT—A DREARY NIGHT—
STRIKING A LIGHT—END OF 1854.~~

CHAPTER
XXXII.

Bonsall
and Pe-
tersen
brought
back by
Esqui-
maux.

Sad con-
dition of
the absent
party.

I WAS asleep in the forenoon of the 7th, after the fatigue of an extra night-watch, when I was called to the deck by the report of "Esquimaux sledges." They came on rapidly, five sledges, with teams of six dogs each, most of the drivers strangers to us; and in a few minutes were at the brig. Their errand was of charity: they were bringing back to us Bonsall and Petersen, two of the party that left us on the 28th of August.

The party had many adventures and much suffering to tell of. They had verified by painful and perilous experience all I had anticipated for them. But the most stirring of their announcements was the condition they had left their associates in, two hundred miles off, divided in their counsels, their energies broken, and their provisions nearly gone. I reserve for another page the history of their wanderings. My first thought was of the means of rescuing and relieving them.

I resolved to despatch the Esquimaux escort at once with such supplies as our miserably-imperfect stores allowed, they giving their pledge to carry them with all speed, and, what I felt to be much less certain, with all honesty. But neither of the gentlemen who had come with them felt himself in condition to repeat the journey. Mr. Bonsall was evidently broken down, and Petersen, never too reliable in emergency, was for postponing the time of setting out. Of our own party—those who had remained with the brig—M'Gary, Hans, and myself, were the only ones able to move, and of these M'Gary was now fairly on the sick list. We could not be absent for a single day without jeopardizing the lives of the rest.

"December 8, Friday.—I am much afraid these provisions will

never reach the wanderers. We were busy every hour since Bonsall arrived getting them ready. We cleaned and boiled and packed a hundred pounds of pork, and sewed up smaller packages of meat-biscuit, bread-dust, and tea; and despatched the whole, some three hundred and fifty pounds, by the returning convoy. But I have no faith in an Esquimaux under temptation, and I almost regret that I did not accompany them myself. It might have been wiser. But I will set Hans on the track in the morning; and, if I do not hear within four days that the stores are fairly on their way, *coûte qui coûte*, I will be off to the lower bay and hold the whole tribe as hostages for the absent party.

"Brooks is wasting with night-sweats; and my iron man, M'Gary, has been suffering for two days with anomalous cramps from exposure.

"These Esquimaux have left us some walrus-beef; and poor little Myouk, who is unabated in his affection for me, made me a special present of half a liver. These go of course to the hospital. God knows they are needed there!

"December 9, Saturday.—The superabundant life of Northumberland Island has impressed Petersen as much as it did me. I cannot think of it without recurring to the fortunes of Franklin's party. Our own sickness I attribute to our civilized diet; had we plenty of frozen walrus I would laugh at the scurvy. And it was only because I was looking to other objects—summer researches, and explorations in the fall with the single view to escape—that I failed to secure an abundance of fresh food. Even in August I could have gathered a winter's supply of birds and cochlearia.

"From May to August we lived on seal, twenty-five before the middle of July, all brought in by one man: a more assiduous and better organized hunt would have swelled the number without a limit. A few boat-parties in June would have stocked us with eider-eggs for winter use, three thousand to the trip; and the snowdrifts would have kept them fresh for the breakfast-table. I loaded my boat with ducks in three hours as late as the middle of July, and not more than thirty-five miles from our anchorage. And even now, here are these Esquimaux, sleek and oily with their walrus-blubber, only seventy miles off. It is not a region for starvation, nor ought it to be for scurvy.

"December 12, Tuesday.—Brooks awoke me at three this morn-

CHAPTER
XXXII.
Provisions
for the
absent
party.

Causes of
scurvy.

Means of
preserving
fresh
meat.

CHAPTER XXII.
 "Esquimaux again."

ing with the cry of 'Esquimaux again!' I dressed hastily, and, groping my way over the pile of boxes that leads up from the hold into the darkness above, made out a group of human figures,



CLIFFS, NORTHUMBERLAND ISLAND.

masked by the hooded jumpers of the natives. They stopped at the gangway, and, as I was about to challenge, one of them sprang forward and grasped my hand. It was Doctor Hayes. A few words, dictated by suffering, certainly not by any anxiety as to his reception, and at his bidding the whole party came upon deck. Poor fellows! I could only grasp their hands and give them a brother's welcome.

The absent
 party wel-
 comed
 back.

"The thermometer was at minus 50°; they were covered with rime and snow, and were fainting with hunger. It was necessary to use caution in taking them below; for, after an exposure of such fearful intensity and duration as they had gone through, the

warmth of the cabin would have prostrated them completely. They had journeyed three hundred and fifty miles ; and their last run from the bay near Etah, some seventy miles in a right line, was through the hummocks at this appalling temperature.

CHAPTER
XXXII.
A terrible
journey.

"One by one they all came in and were housed. Poor fellows ! as they threw open their Esquimaux garments by the stove, how they relished the scanty luxuries which we had to offer them ! The coffee and the meat-biscuit soup, and the molasses and the wheat bread, even the salt pork which our scurvy forbade the rest of us to touch,—how they relished it all ! For more than two months they had lived on frozen seal and walrus-meat.

"They are almost all of them in danger of collapse, but I have no apprehension of life unless from tetanus. Stephenson is prostrate with pericarditis. I resigned my own bunk to Dr. Hayes, who is much prostrated : he will probably lose two of his toes, perhaps a third. The rest have no special injury.

Sickness.

"I cannot crowd the details of their journey into my diary. I have noted some of them from Dr. Hayes's words ; but he has promised me a written report, and I wait for it. It was providential that they did not stop for Petersen's return, or rely on the engagements which his Esquimaux attendants had made to them as well as to us. The sledges that carried our relief of provisions passed through the Etah settlement empty, on some furtive project, we know not what.

"*December 13, Wednesday.*—The Esquimaux who accompanied the returning party are nearly all of them well-known friends. They were engaged from different settlements, but, as they neared the brig, volunteers added themselves to the escort till they numbered six drivers and as many as forty-two dogs. Whatever may have been their motive, their conduct to our poor friends was certainly full of humanity. They drove at flying speed ; every hut gave its welcome as they halted ; the women were ready without invitation to dry and chafe their worn-out guests.

The Esqui-
maux
escort.

Their
kindness.

"I found, however, that there were other objects connected with their visit to the brig. Suffering and a sense of necessity had involved some of our foot-worn absentees in a breach of hospitality. While resting at Kalutunah's hut, they had found opportunity of appropriating to their own use certain articles of clothing, fox-skins and the like, under circumstances which admitted of justifi-

CHAPTER

XXXII.

Necessity
for recon-
ciliation.

cation only by the law of the more sagacious and the stronger. It was apparent that our savage friends had their plaint to make, or, it might be, to avenge.

"My first attention, after ministering to the immediate wants of all, was turned to the office of conciliating our Esquimaux benefactors. Though they wore their habitual faces of smiling satisfaction, I could read them too well to be deceived. Policy, as well as moral duty, have made me anxious always to deserve their respect; but I had seen enough of mankind in its varied relations not to know that respect is little else than a tribute to superiority, either real or supposed, and that, among the rude at least, one of its elements is fear.

Confer-
ence and
inquiry.

"I therefore called them together in stern and cheerless conference on the deck, as if to inquire into the truth of transactions that I had heard of, leaving it doubtful from my manner which was the party I proposed to implicate. Then, by the intervention of Petersen, I called on Kalutunah for his story, and went through a full train of questionings on both sides. It was not difficult to satisfy them that it was my purpose to do justice all round. The subject of controversy was set out fully, and in such a manner as to convince me that an appeal to kind feeling might have been substituted with all effect for the resort to artifice or force. I therefore, to the immense satisfaction of our stranger guests, assured them of my approval, and pulled their hair all round.

The dor-
mitory.

"They were introduced into the oriental recess of our dormitory,—hitherto an unsolved mystery. There, seated on a red blanket, with four pork-fat lamps throwing an illumination over old worsted damask curtains, hunting-knives, rifles, beer-barrels, galley-stove, and chronometers, I dealt out to each man five needles, a file, and a stick of wood. To Kalutunah and Shunghu I gave knives and other extras; and in conclusion spread out our one remaining buffalo close to the stove, built a roaring fire, cooked a hearty supper, and by noonday they were sleeping away in a state of thorough content. I explained to them further that my people did not steal; that the fox-jumpers, and boots, and sledges were only taken to save their lives; and I thereupon returned them.

"The party took a sound sleep, and a second or rather a continuous feed, and left again on their return through the hum-

mocks with apparent confidence and good humour. Of course they prigg'd a few knives and forks ;—but that refers itself to a national trait.

"December 23, *Saturday*.—This uncalculated accession of numbers makes our little room too crowded to be wholesome : I have to guard its ventilation with all the severity that would befit a surgical ward of our Blockley Hospital. We are using the Esquimaux lamp as an accessory to our stove : it helps out the cooking and water-making, without encroaching upon our rigorously-meted allowance of wood. But the odour of pork-fat, our only oil, we have found to be injurious ; and our lamps are therefore placed outside the *tossut*, in a small room bulkheaded off for their use.

"This new arrangement gave rise yesterday to a nearly fatal disaster. A watch had been stationed in charge of the lamp, with the usual order of 'No uncovered lights.' He deserted his post. Soon afterward Hans found the cooking-room on fire. It was a horrible crisis ; for no less than eight of our party were absolutely nailed to their beds, and there was nothing but a bulkhead between them and the fire. I gave short, but instant orders, stationing a line between the tide-hole and the main hatch, detailing two men to work with me, and ordering all the rest who could move to their quarters. Dr. Hayes with his maimed foot, Mr. Brooks with his contracted legs, and poor Morton, otherwise among our best men, could do nothing.

"Before we reached the fire the entire bulkhead was in a blaze as well as the dry timbers and skin of the brig. Our moss walls, with their own tinder-like material and their light casing of inflammable wood, were entirely hidden by the flames. Fortunately the furs of the recently-returned party were at hand, and with them I succeeded in smothering the fire. But I was obliged to push through the blaze of our sailcloth bulkhead in order to defend the wall ; and in my anxiety to save time, I had left the cabin without either cap or mittens. I got through somehow or other, and tore down the canvas which hung against that dangerous locality. Our rifles were in this corner, and their muzzles pointing in all directions.

"The water now began to pass down ; but with the discharge of the first bucketful the smoke overcame me. As I found myself going I pushed for the hatchway, knowing that the bucket-line

CHAPTER

XXXII.

Crowd and
want of
air.

Alarm of
fire.

The moss
walls in a
blaze.

CHAPTER would *feel* me. Seeing was impossible ; but, striking Ohlsen's
 XXXII. legs as I fell, I was passed up to the deck, *minus* beard, eyebrows,
 and forelock, *plus* two burns on the forehead and one on each
 palm.

The fire
 got under. "In about three minutes after making way with the canvas
 the fire was got under, and in less than half an hour all was safe
 again. But the transition, for even the shortest time, from the
 fiery Shadrachian furnace-temperature below, to 46° below zero
 above, was intolerably trying. Every man suffered, and few
 escaped without frost-bitten fingers.

"The remembrance of the danger and its horrible results almost
 miraculously averted shocks us all. Had we lost our brig, not a
 man could have survived. Without shelter, clothing, or food, the
 thermometer almost 80° below the freezing point, and a brisk wind
 stirring, what hope could we have on the open ice field ?

Christmas
 dinner. "*December 25, Christmas, Monday.*—All together again, the
 returned and the steadfast, we sat down to our Christmas dinner.
 There was more love than with the stalled ox of former times ;
 but of herbs none. We forgot our discomforts in the blessings
 which adhered to us still ; and when we thought of the long road
 ahead of us, we thought of it hopefully. I pledged myself to give
 them their next Christmas with their homes ; and each of us drank
 his 'absent friends' with ferocious zest over one-eighteenth part
 of a bottle of sillery,—the last of its hamper, and, alas ! no longer
mousseux.

"But if this solitary relic of festival days had lost its sparkle,
 we had not. We passed around merrily our turkeys roast and
 boiled, roast beef, onions, potatoes, and cucumbers, watermelons,
 and God knows what other cravings of the scurvy-sickened palate,
 with entire exclusion of the fact that each one of these was vari-
 ously represented by pork and beans. Lord Peter himself was not
 more cordial in his dispensation of plum-pudding, mutton, and
 custard to his unbelieving brothers.

M'Gary's
 story. "M'Gary, of course, told us his story. We hear it every day,
 and laugh at it almost as heartily as he does himself. Cæsar
 Johnson is the guest of 'Ole Ben,' coloured gentlemen both, who
 do occasional white-washing. The worthies have dined stanchly
 on the dish of beans, browned and relished by its surmounting
 cube of pork. A hospitable pause, and, with a complacent wave

of the hand, Ole Ben addresses the lady hostess—'Ole woman, bring on de resarve.' 'Ha'n't got no resarve.' 'Well, den,'—with a placid smile,—'bring on de beans!'

"So much for the Merrie Christmas. What portion of its mirth was genuine with the rest I cannot tell, for we are practised actors some of us; but there was no heart in my share of it. My thoughts were with those far off, who are thinking, I know, of me. I could bear my own troubles as I do my eider-down coverlet, for I can see myself as I am, and feel sustained by the knowledge that I have fought my battle well; but there is no one to tell of this at the home-table. Pertinacity, unwise daring, calamity—any of these may come up unbidden, as my name circles round, to explain why I am still away."

For some days before Christmas I had been meditating a sledge journey to our Esquimaux neighbours. The condition of the little party under my charge left me no alternative, uncomfortable and hazardous as I knew that it must be. I failed in the first effort; but there were incidents connected with it which may deserve a place in this volume. I recur to my journal for a succinct record of my motives in setting out:—

"December 26, *Tuesday*.—The moon is nearly above the cliffs; the thermometer -57° to -45° , the mean of the past four days. In the midst of this cheering conjunction, I have ahead of me a journey of a hundred miles, to say nothing of the return. Worse than this, I have no landmarks to guide me, and must be my own pioneer.

"But there is a duty in the case. M'Gary and Brooks are sinking, and that rapidly. Walrus beef alone can sustain them, and it is to be got from the natives, and nowhere else. It is a merciful change of conditions that I am the strongest now of the whole party, as last winter I was the weakest. The duty of collecting food is on me. I shall go first to the lower Bay Esquimaux, and thence, if the hunt has failed there, to Cape Robertson.

"My misgivings are mostly on account of the dogs; for it is a rugged, hummocked drive of twenty-two hours, even with strong teams and Esquimaux drivers. We have been feeding them on salt meat, for we have had nothing else to give them, and they are out of health; and there are hardly enough of them at best to carry

CHAPTER
XXXII.

Plan of a
sledge
journey.

To procure
fresh meat.

CHAPTER
XXXII.Arrange-
ments.The dogs
and their
food.Moonlight
for the
journey.

our lightest load. If one of these tetanoids should attack them on the road, it may be *game up* for all of us.

"But it is to be tried at last. Petersen will go with me, and we will club our wits. I do not fear the cold. We are impregnable in our furs while under exercise; though if we should be forced to walk, and give out, it might be a different matter. We shall have, I imagine, a temperature not much above -54° , and I do not see how we are to carry heating apparatus. We have load enough without it. Our only diet will be a stock of meat biscuit, to which I shall add for myself—Petersen's taste is less educated—a few rats, chopped up and frozen into the tallow-balls.

"*December 28, Thursday.*—I have fed the dogs the last two days on their dead brethren. Spite of all proverbs, *dog will eat dog* if properly cooked. I have been saving up some who died of fits, intending to use their skins, and these have come in very opportunely. I boil them into a sort of bloody soup, and deal them out twice a day in chunks and solid jelly; for of course they are frozen like quartz rock. These salt meats are absolutely poisonous to the Northern Esquimaux dog. We have now lost fifty odd, and one died yesterday in the very act of eating his reformed diet.

"The moon to-morrow will be for twelve hours above the horizon, and so nearly circumpolar afterward as to justify me in the attempt to reach the Esquimaux hunting-ground above Cape Alexander. Everything is ready, and, God willing, I start to-morrow, and pass the four hours' dog-halt in the untenanted hut of Anoatok. Then we have, as it may be, a fifteen, eighteen, or twenty hours' march, run and drive, before we reach a shelter among the heathen of the bay.

"*January 2, Tuesday.*—The dogs began to show signs of that accursed tetanoid spasm of theirs before we passed Ten-mile Ravine. When we reached Basalt Camp, six out of eight were nearly useless. Our thermometer was at -44° , and the wind was blowing sharply out of the gorge from the glacier. Petersen wanted to return, but was persuaded by me to walk on to the huts at Anoatok, in the hope that a halt might restore the animals. We reached them after a thirty miles' march.

"The sinuosities of this bay gave fearful travel: the broken ice clung to the rocks; and we could only advance by climbing

up the ice-foot and down again upon the floe, as one or the other gave us the chance of passing. It was eleven hours and over before we were at the huts, having made by sledge and foot-tramp forty-five miles. We took to the best hut, filled in its broken front with snow, housed our dogs, and crawled in among them.

"It was too cold to sleep. Next morning we broke down our door and tried the dogs again: they could hardly stand. A gale now set in from the southwest, obscuring the moon and blowing very hard. We were forced back into the hut; but, after corking up all openings with snow and making a fire with our Esquimaux lamp, we got up the temperature to 30° below zero, cooked coffee, and fed the dogs freely. This done, both Petersen and myself, our clothing frozen stiff, fell asleep through sheer exhaustion; the wind outside blowing death to all that might be exposed to its influence.

"I do not know how long we slept, but my admirable clothing kept me up. I was cold, but far from dangerously so; and was in a fair way of sleeping out a refreshing night, when Petersen waked me with—'Captain Kane, the lamp's out.' I heard him with a thrill of horror. The gale had increased; the cold was piercing, the darkness intense; our tinder had become moist, and was now like an icicle. All our fire-arms were stacked outside, for no Arctic man will trust powder in a condensing temperature. We did not dare to break down our doorway, for that would admit the gale; our only hope of heat was in re-lighting our lamp. Petersen, acting by my directions, made several attempts to obtain fire from a pocket-pistol; but his only tinder was moss, and our heavily stone-roofed hut or cave would not bear the concussion of a rammed wad.

"By good luck I found a bit of tolerably dry paper in my jumper; and, becoming apprehensive that Petersen would waste our few percussion-caps with his ineffectual snappings, I determined to take the pistol myself. It was so intensely dark that I had to grope for it, and in doing so touched his hand. At that instant the pistol became distinctly visible. A pale bluish light, slightly tremulous but not broken, covered the metallic parts of it, the barrel, lock, and trigger. The stock too, was clearly discernible as if by the reflected light, and, to the amazement of both of us, the thumb and two fingers with which Petersen was holding

CHAPTER
XXXII.

A gale.

Cold
stormy
wind and
darkness.Striking
fire.

CHAPTER
XXXII.
Phosphorescence.

it, the creases, wrinkles, and circuit of the nails clearly defined upon the skin. The phosphorescence was not unlike the ineffectual fire of the glow-worm. As I took the pistol my hand became illuminated also, and so did the powder-rubbed paper when I raised it against the muzzle.

"The paper did not ignite at the first trial, but, the light from it continuing, I was able to charge the pistol without difficulty, rolled up my paper into a cone, filled it with moss sprinkled over with powder, and held it in my hand while I fired. This time I succeeded in producing flame, and we saw no more of the phosphorescence. I do not stop for theory or argument to explain this opportune phenomenon; our fur clothing and the state of the atmosphere may refer it plausibly enough to our electrical condition.

Forced
to return
to the
brig.

"As soon as the wind had partially subsided, we broke out of the hut and tried the dogs toward Refuge Inlet; but the poor broken-down animals could not surmount the hummocks; and as a forced necessity to save their lives and ours, we resolved to push for the brig on foot, driving them before us. We made the walk of forty-four miles in sixteen hours, almost scudding before the gale, and arrived safely at 7 P.M. of Sunday; the temperature -40° ."

With this fruitless adventure closed the year 1854.

CHAPTER XXXIII.

MODES OF LIFE—THE INSIDE DOG—PROJECTED JOURNEY—DOG-HABITS—
THE DARKNESS—RAW MEAT—PLANS FOR SLEDGING—THE SOUTH-EAST
WINDS—PLAN OF JOURNEY—A RELISHING LUNCH—ITINERARY—OUTFIT
—CARGO AND CLOTHING—KAPETAH AND NESSAK—FOOT-GEAR—THE FOX
TAIL—CARPET-KNIGHTS—BURNING CABLES.

"January 6, 1855, *Saturday*.—If this journal ever gets to be inspected by other eyes, the colour of its pages will tell of the atmosphere it is written in. We have been emulating the Esquimaux for some time in everything else; and now, last of all, this intolerable temperature and our want of fuel have driven us to rely on our lamps for heat. Counting those which I have added since the wanderers came back, we have twelve constantly going, with the grease and soot everywhere in proportion.

"I can hardly keep my charts and registers in anything like decent trim. Our beds and bedding are absolutely black, and our faces begrimed with fatty carbon like the Esquimaux of South Greenland. Nearer to us, our Smith's Straits Esquimaux are much more cleanly in this branch of domestic arrangements. They attend their lamps with assiduous care, using the long radicles of a spongy moss for wick, and preparing the blubber for its office by breaking up the cells between their teeth. The condensed blubber, or, more properly, fat, of the walrus, is said to give the best flame.

"Our party, guided by the experience of the natives, use nearly the same form of wick, but of cotton. Pork fat, boiled to lessen its salt, is our substitute for blubber; and, guided by a suggestion of Professor Olmstead, I mix a portion of resin with the lard to increase its fluidity. Sundry devices in the way of metal reverberators conduct and diffuse the heat, and so successfully, that a single wick will keep liquid ten ounces of lard with the air around at minus 30°.

"The heat given out by these burners is astonishing. One four-wicked lamp not very well attended gives us six gallons of

CHAPTER
XXXIII.
Smoky
lamps.

Esqui-
maux
lamps.

Devices to
conduct
and diffuse
heat.

CHAPTER
XXXIII.Lamp for
cooking.

water in twelve hours from snow and ice of a temperature of minus 40°, raising the heat of the cabin to a corresponding extent, the lamp being entirely open. With a line-wick—another Esquimaux plan—we could bake bread or do other cookery. But the crust of the salt and the deposit from the resin are constantly fouling the flame; and the consequence is, that we have been more than half the time in an atmosphere of smoke.

Effect of
smoke on
health.

“Fearing the effect of this on the health of every one, crowded as we are, and inhaling so much insoluble foreign matter without intermission, I have to-day reduced the number of lights to four—two of them stationary, and communicating by tin funnels with our chimney, so as to carry away their soot.

“Mr. Wilson has relapsed. I gave him a potash (saleratus) warm bath to-day, and took his place at watch. I have now seven hours' continuous watch at one beat.

Average
tempera-
ture.

“*January 12, Friday.*—In reviewing our temperatures, the monthly and annual means startle me. Whatever views we may have theoretically as to the distribution of heat, it was to have been expected that so large a water area but thirty-five miles to the south-west by west of our position would tell upon our records; and this supposition was strengthened by the increased fall of snow, which was clearly due to the neighbourhood of this water.

The dogs.

“*January 13, Saturday.*—I am feeding up my few remaining dogs very carefully; but I have no meat for them except the carcasses of their late companions. These have to be boiled; for in their frozen state they act as caustics, and, to dogs famishing as ours have been, frozen food often proves fatal, abrading the stomach and cesophagus. One of these poor creatures had been a child's pet among the Esquimaux. Last night I found her in nearly a dying state at the mouth of our *tossut*, wistfully eyeing the crevices of the door as they emitted their forbidden treasures of light and heat. She could not move, but, completely subdued, licked my hand—the first time I ever had such a civilized greeting from an Esquimaux dog. I carried her in among the glories of the moderate paradise she aspired to, and cooked her a dead puppy soup. She is now slowly gaining strength, but can barely stand.

“I want all my scanty dog-force for another attempt to communicate with the bay settlements. I am confident we will find

Esquimaux there alive, and they *shall* help us. I am not satisfied with Petersen, the companion of my last journey; he is too cautious for the emergency. The occasion is one that calls for every risk short of the final one that man can encounter. My mind is made up, should wind and ice at all point to its successful accomplishment, to try the thing with Hans. Hans is completely subject to my will, careful and attached to me, and by temperament daring and adventurous.

CHAPTER
XXXIII.
Choice of
a com-
panion.

"Counting my greatest possible number of dogs, we have but five at all to be depended on, and these far from being in condition for the journey. Toodla, Jenny—at this moment officiating as wet-nurse—and Rhina, are the relics of my South Greenland teams; little Whitey is the solitary Newfoundlander; one big yellow and one feeble little black, all that are left of the powerful recruits we obtained from our Esquimaux brethren.

Number of
dogs

"It is a fearful thing to attempt a dog-trot of near one hundred miles, where your dogs may drop at any moment, and leave you without protection from 50° below zero. As to riding, I do not look to it; we must run alongside of the sledge, as we do on shorter journeys. Our dogs cannot carry more than our scanty provisions, our sleeping bags, and guns.

"At home one would fear to encounter such hoopspined, spitting, snarling beasts as the Esquimaux dogs of Peabody Bay. But, wolves as they are, they are far from dangerous: the slightest appearance of a missile or cudgel subdues them at once. Indispensable to the very life of their masters, they are treated, of course, with studied care and kindness; but they are taught from the earliest days of puppy-life a savoury fear that makes them altogether safe companions even for the children. But they are absolutely ravenous of everything below the human grade. Old Yellow, who goes about with arched back, gliding through the darkness more like a hyena than a dog, made a pounce the other day as I was feeding Jenny, and, almost before I could turn, had gobbled down one of her pups. As none of the litter will ever be of sledging use, I have taken the hint, and refreshed Old Yellow with a daily morning puppy. The two last of the family, who will then, I hope, be tolerably milk-fed, I shall reserve for my own eating.

Dog
habits.

"*January 14, Sunday.*—Our sick are about the same; Wilson, Brooks, Morton, M'Gary, and Riley unserviceable, Dr. Hayes get-

CHAPTER
XXXIII.

Twilight.

ting better rapidly. How grateful I ought to be that I, the weakling of a year ago, am a well and helping man!

"At noonday, in spite of the mist, I can see the horizon gap of Charlotte Wood Fiord, between Bessie Mountain and the other hills to the south-east, growing lighter; its twilight is decidedly less doubtful. In four or five days we will have our noonday sun not more than 8° below the horizon. This depression, which was Parry's lowest, enabled him by turning the paper toward the south to read diamond type. We are looking forward to this more penumbral darkness as an era. It has now been fifty-two days since we could read such type, even after climbing the dreary hills. One hundred and twenty-four days with the sun below the horizon! One hundred and forty before he reaches the rocky shadowing of our brig!

"I found an overlooked godsend this morning,—a bear's head, put away for a specimen, but completely frozen. There is no inconsiderable quantity of meat adhering to it, and I serve it out raw to Brooks, Wilson, and Riley.

Raw meat
useful in
scorbutic
disease.

"I do not know that my journal anywhere mentions our habituation to raw meats, nor does it dwell upon their strange adaptation to scorbutic disease. Our journeys have taught us the wisdom of the Esquimaux appetite, and there are few among us who do not relish a slice of raw blubber or a chunk of frozen walrus-beef. The liver of a walrus (awuktanuk) eaten with little slices of his fat,—of a verity it is a delicious morsel. Fire would ruin the curt, pithy expression of vitality which belongs to its uncooked juices. Charles Lamb's roast-pig was nothing to awuktanuk. I wonder that raw beef is not eaten at home. Deprived of extraneous fibre, it is neither indigestible nor difficult to masticate. With acids and condiments, it makes a salad which an educated palate cannot help relishing; and as a powerful and condensed heat-making and anti-scorbutic food it has no rival.

"I make this last broad assertion after carefully testing its truth. The natives of South Greenland prepare themselves for a long journey in the cold by a course of frozen seal. At Upernavik they do the same with the narwhal, which is thought more heat-making than the seal; while the bear, to use their own expression, is 'stronger travel than all.'

"In Smith's sound, where the use of raw meat seems almost

inevitable from the modes of living of the people, walrus holds the first rank. Certainly this pachyderm, whose finely-condensed tissue and delicately-permeating fat—oh ! call it not blubber—assimilate it to the ox, is beyond all others, and is the very best fuel a man can swallow. It became our constant companion whenever we could get it ; and a frozen liver upon our sledge was valued far above the same weight of pemmican. Now as I write, short of all meat, without an ounce of walrus for sick or sound, my thoughts recall the frost-tempered junks of this pachydermoid amphibian as the highest of longed-for luxuries.

CHAPTER
XXXIII.Walrus as
food.

"My plans for sledging, simple as I once thought them, and simple certainly as compared with those of the English parties, have completely changed. Give me an eight-pound reindeer-skin bag to sleep in, an Esquimaux lamp with a lump of moss, a sheet-iron snow-melter or a copper soup-pot, with a tin cylinder to slip over it and defend it from the wind, a good *pièce de résistance* of raw walrus-beef ; and I want nothing more for a long journey, if the thermometer will keep itself as high as minus 30°. Give me a bear-skin bag and coffee to boot ; and with the clothes on my back I am ready for minus 60°,—but no wind.

Plans for
sledging.

"The programme runs after this fashion. Keep the blood in motion without loitering on the march ; and for the halt, raise a snow-house ; or, if the snow lie scant or impracticable, esconce yourself in a burrow, or under the hospitable lee of an inclined hummock-slab. The outside fat of your walrus sustains your little moss fire ; its frozen slices give you bread, its frozen blubber gives you butter, its scrag ends make the soup. The snow supplies you with water ; and when you are ambitious of coffee there is a bagful stowed away in your boot. Spread out your bear bag, your only heavy moveable ; stuff your reindeer bag inside, hang your boots up outside, take a blade of bone, and scrape off all the ice from your furs. Now crawl in, the whole party of you, feet foremost ; draw the top of your dormitory close, heading to leeward. Fancy yourself in Sybaris ; and, if you are only tired enough, you may sleep—like St. Lawrence on his gridiron, or even a trifle better.

Rules on
the march
and for
the halt.

"January 16, Tuesday.—Again the strange phenomena of the south-east winds. The late changes of the barometer ushered them in, and all hands are astir with their novel influences. With minus 16° outside, our cabin ceiling distils dirty drops of water, our beds

South-east
winds.

CHAPTER
XXXIII.Tempera-
ture.

become doubly damp, and our stove oppressive. We are vastly more comfortable, and therefore more healthy, below hatches, when it is at -60° on deck than when it rises above -30° . The mean heat of our room since the return of the party is, as nearly as can be determined, $+48^{\circ}$.

"The sick generally are about the same; but Wilson has symptoms showing themselves that fill me with distress. The state of things on board begins to press upon me personally; but by sleeping day-hours I manage well enough. Hans, Ohlsen, and myself are the only three sound men of the organized company.

Want of
food.

"*January 17, Wednesday.*—There is no evading it any longer; it has been evident for the past ten days that the 'present state of things cannot last.' We require meat, and cannot get along without it. Our sick have finished the bear's head, and are now eating the condemned abscessed liver of the animal, including some intestines that were not given to the dogs. We have about three days' allowance; thin chips of raw frozen meat, not exceeding four ounces in weight for each man per diem. Our poor fellows eat it with zest; but it is lamentably little.

Plan of an
expedition
on foot.

"Although I was unsuccessful in my last attempt to reach the huts with the dogs, I am far from sure that with a proper equipment it could not be managed by walking. The thought weighs upon me. A foot-travel does not seem to have occurred to my comrades; and at first sight the idea of making for a point seventy-five miles by the shortest line from our brig, with this awfully cold darkness on, is gloomy enough.

"But I propose walking at first only as far as the broken hut at Anoatok (the 'wind-loved spot'), and giving our poor dogs a chance of refreshing there. After this, Hans and myself will force them forward as far as we can, with nothing but our sleeping gear, and spend the second night wherever they happen to break down. After that, we can manage the rest of the journey without any luggage but our personal clothing.

"It seems hard to sacrifice the dogs, not to speak of the rest of the party; but the necessity is too palpable and urgent. As we are now, a very few deaths would break us up entirely. Still, the emergency would not move me if I did not feel, after careful, painful thought, that the thing can be accomplished. If, by the blessing of the Great Ruler, it should prove successful, the result will

secure the safety of all hands. No one knows as yet of my intention except Hans himself. I am quietly preparing a special outfit, and will leave with the first return of moonlight. CHAPTER XXXIII.

"M'Gary, my relief, calls me; he has foraged out some raw cabbage and spiced it up with curry-powder, our only remaining pepper. This, with a piece of corn-bread,—no bad article either,—he wants me to share with him. True to my old-times habitude, I hasten to the cabbage,—cold roast-beef, Worcester sauce, a head of endive, and a bottle—not one drop less—of Preston ale (I never drink any other). M'Gary, 'bring on de beans!'

"*January 18, Thursday, midnight.*—Wind howling on deck,—a number nine gale, a warm south-easter directly from the land. The mean temperature of this wind is -20° . Warm as this may seem, our experience has taught us to prefer -40° with a calm to -10° with a gale in the face. Stormy weather.

"If we only had daylight, I should start as soon as the present wind subsides, counting on a three days' intermission of atmospheric disturbance. But we have no moon, and it is too dark to go tumbling about over the squeezed ice. I must wait.

"I alluded yesterday to my special equipment. Let me imagine myself explaining to the tea-table this evening's outfit, promise, and purposes."

I. *Itinerary.*—From brig *Advance*, Rensselaer Harbour, to the Esquimaux huts of Etah Bay, following the line of ice-travel close along the coast:—

	Miles.
1. From brig to Ten-mile Ravine.....	10
2. From Ten-mile Ravine to Basalt Camp.....	6
3. From Basalt Camp to Helen River.....	10
4. Helen's River to Devil's Jaws (off Godsend Island).....	9
5. Godsend Island to Anoatok and Hummock Pass.....	7
6. Hummock Pass to Refuge Inlet.....	7
7. Refuge Inlet to Cape Hatherton.....	8
8. Cape Hatherton to Second Hummock Pass.....	12
9. Across Second Pass to south end of Littleton Island.....	8
10. South end of Littleton Island to Point Salvation.....	12
11. Point Salvation to Esquimaux huts.....	2
Total travel in miles.....	91

II. *Temperature.*—Mean, about -45° . Range -40° to -60° . Temperature.

III. *Resources.*—Five half-starved dogs; Hans Cristian, Dr. Kane, a light sledge, and outfit.

CHAPTER
XXXIII.Outfit for
journey.

IV. *Outfit*.—To encounter broken ice in the midst of darkness and at a temperature destructive to life, everything depends upon your sledge. Should it break down, you might as well break your own leg; there is no hope for you. Our sledge, then, is made of well-tried oak, dovetailed into a runner shod with iron. No metal is used besides, except the screws and rivets which confine the sledge to its runners. In this intense cold, iron snaps like glass, and no immovable or rigidly-fastened wood-work would stand for a moment the fierce concussions of a drive. Everything is put together with lashings of seal-skin, and the whole fabric is the skeleton framework of a sledge as flexible as a lady's work-basket, and weighing only forty pounds. On this we fasten a sacking-bottom of canvas, tightly stretched, like its namesake of the four-post bedstead, around the margin. We call this ticking the apron and cover; the apron being a flap of sixteen inches high, surrounding the cover, and either hanging loose at its sides like a valance, or laced up down the middle. Into this apron and cover you pack your cargo, the less of it the better; and then lace and lash the whole securely together.

Cargo.

V. *The cargo* may consist of,—1. A blanket-bag of fur, if you can get it; but on our present sleigh-ride, buffalo being too heavy and our reindeer-skins all destroyed by wet, I take an eider-down coverlet, adding—2. A pillow stuffed with straw or shavings, to be placed under the small of the back while sleeping; 3. An extra pair of boots; and 4. A snow saw.

Kitchen
furniture
and pro-
visions.

"Superadd to these the ancient soup-pot, our soap-stone, kollopsut, one Esquimaux lamp, one lump of moss, one cup, and a tinder-box,—all these for the kitchen; a roll of frozen meat-biscuit, some frozen lady-fingers of raw hashed fox, a small bag of coffee, and twenty-four pieces of hard tack (ship's bread), for the larder; our fire-arms, and no less essential ice-poles;—all these, no more nor less, and you have the entirety of our outfit,—the means wherewith we are to track this icy labyrinth, under a frozen sky, for an uncertain asylum some ninety-three miles off.

"In general, eight powerful wolf-like dogs will draw such a cargo like the wind: I have but four wretched animals, who can hardly drag themselves.

"The clothing or personal outfit demands the nicest study of

experience. Except a spare pair of boots, it is all upon the back. It requires the energies of tyrant custom to discipline a traveller into comfort under these Smith Sound temperatures; and, let him dress as he may, his drill will avail but little unless he has a windless atmosphere without and a heat-creating body within.

"Rightly clad, he is a lump of deformity waddling over the ice, unpicturesque, uncouth, and seemingly helpless. It is only when you meet him covered with rime, his face peering from an icy halo, his beard glued with frozen respiration, that you look with intelligent appreciation on his many-coated panoply against King Death.

"The Smith's Straits fox-skin jumper, or *kapetah*, is a closed shirt, fitting very loosely to the person, but adapted to the head and neck by an almost air-tight hood, *nessak*. The *kapetah* is put on from below; the arms of the man pass through the arms of the garment, and the head rises through a slit at the top; around this slit comes up the hood. It is passed over the head from behind and made to embrace the face and forehead. Underneath the *kapetah* is a similar garment, but destitute of the hood, which is put on as we do an inner shirt. It is made of bird-skins chewed in the mouth by the women till they are perfectly soft, and it is worn with this unequalled down next the body. More than five hundred auks have been known to contribute to a garment of this description.

"So far the bust and upper limbs. The lower extremities are guarded by a pair of bear-skin breeches, the *nannooke*,—the characteristic and national vestiture of this strange people. They are literal copies, and in one sense fac-similes, of the courtly knee-buckled ones of our grandfathers, but not rising above the crests of the pelvis, thus leaving exposed those parts which in civilized countries are shielded most carefully.

"I regard these strange and apparently-inconvenient articles of dress as unique. They compressed the muscles, which they affected to cover, in a manner so ungrandisonian that I leave a special description of their structure to my note-book.

"The foot-gear consists of a bird-skin short sock, with a padding of grass nicely distributed over the sole. Outside of this comes a bear-skin leg, sewed with great skill to the natural sole of the plantigrade, and abundantly wadded about the foot with dry non-conducting straw.

CHAPTER
XXXIII.
Personal
outfit.

Clothing—
the "*kap-
etah*" and
"*nessak*."

The "*nannooke*."

The foot-
gear.

CHAPTER
XXXIII.

Iron men.

"When this simple wardrobe is fully adjusted to the person, we understand something of the wonderful endurance of these Arctic primates. Wrangell called the Jacuti iron men, because they slept at -50° opposite the fire, with their backs exposed. Now, they of Smith's Sound have always an uncovered space between the waistband of the nannooke and the kapetah. To bend forward exposes the back to partial nudity; and, no matter what the attitude, the entire chest is open to the atmosphere from below. Yet in this well-ventilated costume the man will sleep upon his sledge with the atmosphere 93° below our freezing-point.

A fox's
tail.

"The only additional articles of dress are a fox's tail, held between the teeth to protect the nose in a wind, and mitts of seal-skin well wadded with sledge-straw.

"When I saw Kalutunah, who guided the return-party to the brig from Tesseusak, the temperature was below -50° . He was standing in the open air, comfortably scratching his naked skin, ready for a second journey; which, in effect, he made eight hours afterward.

Carpet-
knights.

"We—I mean our party of American hyperboreans—are mere carpet-knights aside of these indomitable savages. Experience has taught us to follow their guidance in matters of Arctic craft; but we have to add a host of European appendages to their outdoor clothing.

"Imagine me, then, externally clad as I have described, but with furs and woollens layer upon layer inside, like the shards of an artichoke, till I am rounded into absolute obesity. Without all this, I cannot keep up my circulation on a sledge; nor indeed without active exercise, if the thermometer is below -54° , the lowest at which I have taken the floes. I have to run occasionally, or I should succumb to the cold."

Anxiety.

So much for my resources of travel, as I have thrown them together from different pages of my journal. The apparent levity with which I have detailed them seems out of keeping with the date under which they stand. In truth, I was in no mirthful humour at any time during the month of January. I had a grave office to perform, and under grave responsibilities; and I had measured them well. I come back, after this long digression, to my daily record of anxieties:—

"January 19 Friday.—The declining tides allow the ice

beneath the ship to take the ground at low-water. This occasions, of course, a good deal of upheaval and some change of position along the ice-tables in which we are cradled. Mr. Ohlsen reports a bending of our cross-beams of six inches, showing that the pressure is becoming dangerous. Anything like leakage would be disastrous in the present condition of the party. Our cabin-floor, however, was so elevated by our carpenter's work of last fall, that it could not be flooded more than six inches; and I hope that the under-bottom ice exceeds that height. At any rate we can do nothing, but must await the movements of the floe. March is to be our critical month.

"George Whipple shows swelled legs and other symptoms of the enemy; Riley continues better; Brooks weak, but holding his ground; Wilson no better; if anything, worse. I am myself so disabled in the joints as to be entirely unfit to attend to the traps or do any work. I shall try the vapour-bath and sweat, Indian fashion.

"*January 21, Sunday.*—We have been using up our tar-laid hemp, hawsers for nearly a week, by way of eking out our firewood, and have reduced our consumption of pitch-pine to thirty-nine pounds a day. But the fine particles of soot throughout the room have affected the lungs of the sick so much that I shall be obliged to give it up. I am now trying the Manilla; but it consumes too rapidly; with care we may make something of it.

"*January 22, Monday.*—Busy preparing for my trip to the lower Esquimaux settlement. The barometer remains at the extraordinary height of 30·85,—a bad prelude to a journey!

"Petersen caught another providential fox. We divided him into nine portions, three for each of our scurvied patients. I am off."

CHAPTER
XXXIII.
Presence
of the ice

Increasing
illness.

Turning
cables.

Height of
barometer.

CHAPTER XXXIV.

A BREAK-DOWN—THE HUT IN A STORM—TWO NIGHTS IN THE HUT—FROST AGAIN—THE BACK TRACK—HEALTH ROLL—MEDICAL TREATMENT—HEALTH FAILING—UNSUCCESSFUL HUNT—THE LAST BOTTLES.

CHAPTER
XXXIV.

A break-
down.

"*January 29, Monday.*—The dogs carried us to the lower curve of the reach before breaking down. I was just beginning to hope for an easy voyage, when Toodla and the Big Yellow gave way nearly together—the latter frightfully contorted by convulsions. There was no remedy for it; the moon went down, and the wretched night was upon us. We groped along the ice-foot, and after fourteen hours' painful walking, reached the old hut.

Darkness
and cold.

"A dark water-sky extended in a wedge from Littleton to a point north of the cape. Everywhere else the firmament was obscured by mist. The height of the barometer continued as we left it at the brig, and our own sensations of warmth convinced us that we were about to have a snow-storm.

Esqui-
maux.

"We hardly expected to meet the Esquimaux here, and were not disappointed. Hans set to work at once to cut out blocks of snow to close up the entrance to the hut. I carried in our blubber-lamp, food, and bedding, unharnessed the dogs, and took them into the same shelter. We were barely housed before the storm broke upon us.

The hut in
a storm.

"Here, completely excluded from the knowledge of things without, we spent many miserable hours. We could keep no note of time, and, except by the whirring of the drift against the roof of our kennel, had no information of the state of the weather. We slept, and cooked coffee, and drank coffee, and slept, and cooked coffee, and drank again; and when by our tired instincts we thought that twelve hours must have passed, we treated ourselves to a meal,—that is to say, we divided impartial bites out of the raw hind-leg of a fox, to give zest to our biscuits spread with frozen tallow.

"We then turned in to sleep again, no longer heedful of the storm, for it had now buried us deep in with the snow.

"But, in the mean time, although the storm continued, the temperatures underwent an extraordinary change. I was awakened by the dropping of water from the roof above me; and, upon turning back my sleeping-bag, found it saturated by the melting of its previously-condensed hoar-frost. My eider-down was like a wet swab. I found afterward that the phenomenon of the warm south-east had come unexpectedly upon us. The thermometers at the brig indicated $+26^{\circ}$; and, closer as we were to the water, the weather was probably above the freezing point.

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Change of temperature.

"When we left the brig—how long before it was we did not know—the temperature was -44° . It had risen at least 70° . I defy the strongest man not to suffer from such a change. A close, oppressive sensation attacked both Hans and myself. We both suffered from cardiac symptoms, and are up to this moment under anxious treatment by our comrades. Mr. Wilson, I find, has had spasmodic asthma from it here, and Brooks has had a renewal of his old dyspnoea.

Its effects.

"In the morning—that is to say, when the combined light of the noonday dawn and the circumpolar moon permitted our escape—I found, by comparing the time as indicated by the Great Bear with the present increased altitude of the moon, that we had been pent up nearly two days. Under these circumstances we made directly for the hummocks, *en route* for the bay. But here was a disastrous change. The snow had accumulated under the windward sides of the inclined tables to a height so excessive that we buried sledge, dogs, and drivers, in the effort to work through. It was all in vain that Hans and I harnessed ourselves to, or lifted, levered, twisted, and pulled. Utterly exhausted and sick, I was obliged to give it up. The darkness closed in again, and with difficulty we regained the igloë.

Computation of time by the moon and stars.

"The ensuing night brought a return to hard freezing temperatures. Our luxurious and downy coverlet was a stiff, clotted lump of ice. In spite of our double lamp, it was a miserable halt. Our provisions grew short; the snow kept on falling, and we had still 46 miles between us and the Esquimaux.

Frost again.

"I determined to try the land-ice (ice-foot) by Fog Inlet; and we worked four hours upon this without a breathing-spell,—utterly in vain. My poor Esquimaux, Hans, adventurous and buoyant as he was, began to cry like a child. Sick, worn out, strength gone, dogs

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fast and floundering, I am not ashamed to admit that, as I thought of the sick men on board, my own equanimity also was at fault.

Recon-
noitring
by moon-
light.

"We had not been able to get the dogs out, when the big moon appeared above the water-smoke. A familiar hill, 'Old Beacon Knob,' was near. I scrambled to its top and reconnoitred the coast around it. The ridge about Cape Hatherton seemed to jut out of a perfect chaos of broken ice. The water—that inexplicable North Water—was there, a long black wedge, overhung by crapy wreaths of smoke, running to the northward and eastward. Better than all yet,—could I be deceived?—a trough through the hummock-ridges, and level plains of ice stretching to the south!

"Hans heard my halloo, and came up to confirm me. But for our disabled dogs and the waning moonlight, we could easily have made our journey. It was with a rejoiced heart that I made my way back to our miserable little cavern, and re-stuffed its gaping entrance with the snow. We had no blubber, and of course no fire; but I knew that we could gain the brig, and that, after refreshing the dogs and ourselves, we could now assuredly reach the settlements.

The back
track.

"We took the back track next morning over Bedevilled Reach upon the mid-ice floes, and reached the brig by 4 P.M. on Friday; since when I have been so stiff and scorbutic, so utterly used up, that to-day gives me a first return to my journal.

In the brig
again.

"*January 30, Tuesday.*—My companions on board felt all my disappointment at bringing back no meat; but infinite gladness took the place of regret when they heard the great news of a passage through the hummocks. Petersen began at once to busy himself with his wardrobe; and an eight-day party was organized almost before we turned in, to start as soon as the tempestuous weather subsides and the drifts settle down. It is four days since, but as yet we dare not venture out.

Health
table.

"That there is no time for delay, this health-table will show:—

"Henry Brooks: Unable any longer to go on deck: we carry him with difficulty from his berth to a cushioned locker.

"McGary: Less helpless; but off duty, and saturated with articular scurvy.

Mr. Wilson: In bed. Severe purpuric blotches, and nodes in limbs. Cannot move.

"George Riley : Abed ; limbs less stiff, gums better, r able to do duty.

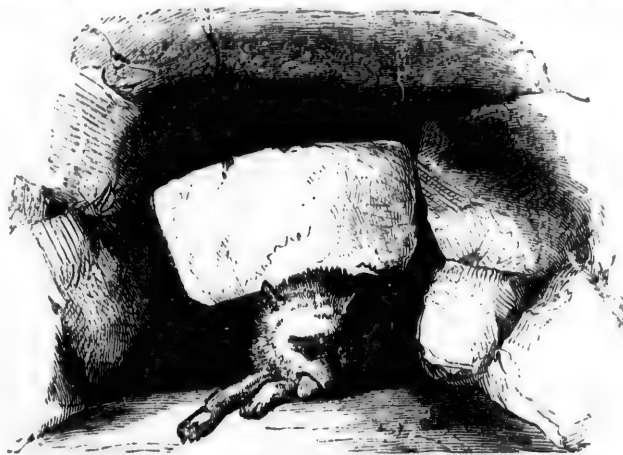
"Thomas Hickey (our cook) : Cannot keep his legs many days more ; already swelled and blistered.

"William Morton : Down with a frozen heel ; the bone exfoliating.

"Henry Goodfellow : Scurvied gums, but generally well.

"Dr. Hayes is prostrate with his amputated toes ; Sontag just able to hobble. In a word, our effective force is reduced to five, —Mr. Ohlsen, Mr. Bonsall, Petersen, Hans, and the Commander ; and even of these some might, perhaps, be rightfully transferred to the other list. We have the whole burden of the hourly observations and the routine of our domestic life, even to the cooking, which we take in rotation.

" Still this remarkable temperature ; the barometer slowly librating between 29.20 and the old 30.40. Snow falling : wind from the south-west, hauling by the west to north : yet the thermometer at -10° and $+3^{\circ}$. We long anxiously for weather to enable our meat-party to start. The past two days our sick have been entirely out of merrit : the foxes seem to avoid



FOX-TRAPS.

our traps. I gave Wilson one raw meal from the messeter Foxtraps muscle which adhered to another old bear's head I was keeping

CHAPTER
XXXIV.Remedies
for scor-
butic dis-
ease.

for a specimen. But otherwise we have had no anti-scorbutic for three days.

"Among other remedies which I oppose to the distemper, I have commenced making sundry salts of iron; among them the citrate and a chlorohydrated tincture. We have but one bottle of brandy left: my applying a half-pint of it to the tincture shows the high value I set upon this noble chalybeate. My nose bled to-day, and I was struck with the fluid brickdusty poverty of the blood. I use iron much among my people: as a single remedy it exceeds all others, except only the specific of raw meat: potash for its own action is well enough to meet some conditions of the disease, and we were in the habit of using freely an extemporaneous citrate prepared from our lime-juice; but, as our cases became more reduced and complicated with hemorrhages, iron was our one great remedy.

The
weather.

"*January 31, Wednesday.*—The weather still most extraordinary. The wind has hauled around, and is now blowing from the north and north-east, usually our coldest and clearest quarter. Yet the diffused mist continues, the snow falls, and the thermometer never records below -20° .

Increase
of illness.

"Our sick are worse; for our traps yield nothing, and we are still without fresh food. The absence of raw fox-meat for a single day shows itself in our scurvy. Hemorrhages are becoming common. My crew,—I have no crew any longer,—the tenants of my bunks cannot bear me to leave them a single watch. Yet I cannot make Petersen try the new path which I discovered and found practicable. Well, the wretched month is over. It is something to be living, able to write. No one has yet made the dark voyage, and January the 31st is upon us.

"*February 2, Friday.*—The weather clears, the full moon shows herself, the sledge is packed, and Petersen will start to-morrow.

Petersen
and Hans
start on a
journey.

"*February 3, Saturday.*—He is gone with Hans. A bad time with Brooks, in a swoon from exhaustion!

"*February 4, Sunday.*—Mr. Ohlsen breaks down: the scurvy is in his knee, and he cannot walk. This day, too, Thomas Hickey, our acting cook, gives way completely. I can hardly realize that among these strong men I alone should be the borne-up man,—the only one, except Mr. Bonsall, on his legs. It some-

times makes me tremble when I think how necessary I am to sustain this state of things. It is a Sunday thought, that it must be for some wise and good end I am thus supported.

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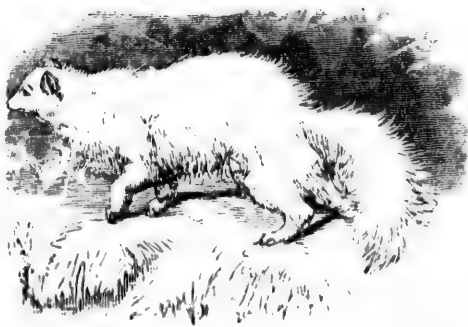
A Sunday thought.

"Made an unsuccessful hunt out toward Mary River ; but, although the daylight was more than ample, tracked nothing. Our sick have been on short commons for the last five days ; and we have given up the traps for want of fresh meat to bait them with. The fiord looked frightfully desolate. Where once was a torrent fighting among ice and rocks, is now a tunnel of drifted snow. Mary Leiper River is a sinuous ravine, swept dry by the gales which issue from the hills, and its rocky bed patched with the frozen relics of its waters.

Short commons.

"I made a dish of freshened codfish-skin for Brooks and Wilson ; they were hungry enough to relish it. Besides this, I had kept back six bottles of our Scotch ale to meet emergencies, and I am dealing these out to them by the wine-glass. It is too cold for brewing in our apartment : the water freezes two feet above the floor. I have given up my writing-table arrangements, and my unfortunate study-lamp is now fixed under a barrel to see if it cannot raise a fermenting temperature. I shall turn brewer to-morrow if it succeeds."

The last bottles.



CHAPTER XXXV.

THE FIRE-CLOTHED BAG—THE WRAITH—COOKERY—A RESPITE—THE
COMING DAWN—THE TRUST—PROSPECTS—ARGUMENT—COLOURED
SKIES—STOVE-FITTING.

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Return of
Petersen
and Hans.

"*February 6, Tuesday.*—At ten, last evening, not long after my journal-record, I heard voices outside. Petersen and Hans had returned. I met them silently on deck, and heard from poor Petersen how he had broken down. The snows had been increasing since my own last trial,—his strength had left him; the scurvy had entered his chest; in a word, he had failed, and Hans could not do the errand alone. Bad enough!

A slight
improve-
ment.

"But to-day our fortunes are on the mend. It has been beautifully clear; and for the first time a shade of bronzed yellow has warmed our noonday horizon, with a gentle violet running into rich brown clouds, totally unlike our night skies. Hans and I started for a hunt,—one to explore new grounds, the other to follow tracks in the recent snow. The result was two rabbits, the first-fruits of the coming light, and the promise of more in the numerous feeding-traces among the rocks of Charlotte Wood Fiord. The meat, our first for ten days, was distributed raw. By keeping the rabbits carefully covered up, they reached the ship sufficiently unfrozen to give us about a pint of raw blood. It was a grateful cordial to Brooks, Wilson, and Riley.

Misty
weather
and a gale.

"*February 7, Wednesday.*—The weather was misty when I went out this morning, and the twinkling of the stars confirmed Petersen's prognostic of a warm south-easter before evening. Mist, stars, and Petersen were right. The gale is upon us, darkening the air with snow, and singing in wild discords through the rigging.

"It is enough to solemnize men of more joyous temperament than ours has been for some months. We are contending at odds with angry forces close around us, without one agent or influence within 1800 miles whose sympathy is on our side.

"My poor fellows, most of them bred in the superstitions of the

sea, are full of evil bodings. We have a large old seal-skin bag on deck, that holds our remnant of furs. It hangs from the main-stay, and we have all of us jested in the times of ordinary darkness about its grotesque physiognomy. To-night it has worn a new character. One of the crew, crawling outside, saw it swinging in the storm with furious energy, and pounding against the mast like a giant boxing-glove. It glowed, too, with supernatural light; and he is sure it spoke some dreadful message, though he was too much perturbed to give it audience. There is no reasoning with him about it, and his messmates' laugh, as they attempt to ridicule his fear, is like the ghost story merriment of a nursery circle."

CHAPTER
XXXV.Super-
stitious
fears.

It was an ugly and withal an anxious night. Mr. Goodfellow, the youngest of our party, had left the cabin soon after dinner for an inland stroll with his gun, and he had not returned when the scanty twilight closed before its time. The wind blew off the coast, piling the snow in great hills and changing the whole face of the floe. As the darkness wore on we became uneasy, and at last alarmed, at his absence. We burnt bluelights and Roman candles to guide him through the night; but it was six o'clock in the morning before he came in, happily none the worse for his adventure.

An anxi-
ous night.

Honest Tom Hickey had been on the deck reconnoitring for him while the gale was at its height. He came down to the mess just before the alarm of the thumping fur-bag, declaring he had seen Mr. Goodfellow moving cautiously along the land-ice and jumping down on the field below. He hurried his tea-things to give him a warm supper, but no one came. In the result, though Tom volunteered to make search at the spot where he had seen his messmate, and Riley offered to accompany him, and I myself looked diligently afterward with a lantern for some hundreds of yards around, we found nothing but fresh-drifted snow, without the trace of a human foot. Tom had seen a *wraith*; he believes it religiously, and associates its mysterious advent with the luminous fur-bag.

A wraith.

"There must be some warm southern area over which this wind comes, some open water, it may be, that is drawing nearer to us, to minister after a time to our escape. But we must go alone. I have given up all hope of rescuing our little vessel. She has been

CHAPTER XXXV. safeguard and home for us through many lengthened trials ; but her time has come. She can never float above the waves again. No hope for the brig. How many of us are to be more fortunate ?

Hans goes to hunt. "February 9, Friday.—Still no supplies. Three of us have been out all day, without getting a shot. Hans thinks he saw a couple of reindeer at a distance ; and his eyes rarely deceive him. He will try for them to-morrow. I have fitted out for him a tent and a sleeping-bag on the second table-land ; and the thermometer is now so little below zero that he will be able to keep the field for a steady hunt. Our sick are sinking for want of fresh food. It is the only specific : I dislike to use the unphilosophical term ; but in our case it is the true one. In large quantities it dissipates the disease ; in ordinary rations it prevents its occurrence ; in small doses it checks it while sustaining the patient. We have learned its value too well to waste it ; every part of every animal has its use. The skin makes the basis of a soup, and the claws can be boiled to a jelly. Lungs, larynx, stomach, and entrails, all are available. I have not permitted myself to taste more than an occasional entrail of our last half-dozen rabbits. Not that I am free from symptoms of the universal pest. I am conscious of a stiffness in the tendons, and a shortness of breath, and a weariness of the bones, that should naturally attend the eruption which covers my body. But I have none of the more fearful signs. I can walk with energy after I get warmed up, I have no bleeding of the gums, and, better than all, thank God, I am without that horrible despondency which the disease nourishes and feeds on. I sleep sound and dream pleasantly—generally about successes in the hunt, or a double ration of reindeer or ptarmigan.

Value of
fresh
meat

Symptoms
of the
pest.

A feathery
quilt.

Three
days' re-
spite.

"It has been a true warm south-easter. The housing-sails have been blown off by the storm, and we are buried up in a snow-drift. But one such feathery quilt is worth all the canvas covering in the world.

"My brewing apparatus has worked well, thanks to stove and storm ; and I have on hand now as unsavoury a dose of flaxseed and quinine as was ever honoured by the name of beer.

"February 10, Saturday.—Three days' respite ! Petersen and myself have made a fruitless hunt ; but Hans comes in with three rabbits. Distribution : the blood to Ohlsen and Thomas ; and to

the other eight of the sick men full rations ; consuming a rabbit and a half. I cannot risk the depression that a single death would bring upon the whole party, and have to deal unfairly with those who can still keep about to save the rest from sinking. Brooks and Ohlsen are in a precarious condition : they have lost the entire mucous membrane of the alveoli ; and Mr. Wilson requires special attendance every hour to carry him through.

"The day is beginning to glow with the approaching sun. The south at noon has almost an orange tinge. In ten days his direct rays will reach our hill tops ; and in a week after he will be dispensing his blessed medicine among our sufferers. Hope of returning day.

"*February 12, Monday.*—Hans is off for his hunting-lodge, 'over the hills and far away,' beyond Charlotte Wood Fiord. I have sent Godfrey with him, for I fear the boy has got the taint like the rest of us, and may suffer from the exposure. He thinks he can bring back a deer, and the chances are worth the trial. We can manage the small hunt, Petersen and I, till he comes back, unless we break down too. But I do not like these symptoms of mine, and Petersen is very far from the man he was. We had a tramp-to-day, both of us, after an imaginary deer,—a *bennisoak* that has been supposed for the last three days to be hunting the neighbourhood of the waterpools of the big fiord, and have come back jaded and sad. If Hans gives way, God help us !"

It is hardly worth while to inflict on the reader a succession of journal-records like these. They tell of nothing but the varying symptoms of sick men, dreary, profitless hunts, relieved now and then by the signalized incident of a killed rabbit or a deer seen, and the longed-for advent of the solar light. Journal records of suffering.

We worked on board—those of us who could work at all—at arranging a new gangway with a more gentle slope, to let some of the party crawl up from their hospital into the air. We were six, all told, out of eighteen, who could affect to hunt, cook, or nurse.

Meanwhile we tried to dream of commerce with the Esquimaux, and open water, and home. For myself, my thoughts had occupation enough in the question of our closing labours. I never lost my hope. I looked to the coming spring as full of responsi-

CHAPTER
XXXV.Trust in
God.

bilities ; but I had bodily strength and moral tone enough to lock through them to the end. A trust, based on experience as well as on promises, buoyed me up at the worst of times. Call it fatalism, as you ignorantly may, there is that in the story of every eventful life which teaches the inefficiency of human means and the present control of a Supreme Agency. See how often relief has come at the moment of extremity, in forms strangely unsought, almost at the time unwelcome ; see, still more, how the back has been strengthened to its increasing burden, and the heart cheered by some conscious influence of an unseen Power.

Thinking quietly over our condition, I spread out in my diary the results which it seemed to point to. After reviewing our sick list and remarking how little efficiency there was in the other members of the party, my memorandum went on :—

Calcula-
tion of
time and
distance.

“We have three months before us of intense cold. We have a large and laborious outfit to arrange,—boats, sledges, provisions, and accoutrements for a journey of alternating ice and water of more than 1300 miles. Our carpenter is among the worst of our invalids. Supposing all our men able to move, four at least of them must be carried by the rest, three in consequence of amputation, and one from frost-wounds ; and our boats must be sledged over some sixty or perhaps ninety miles of terrible ice before launching and loading them. Finally, a part of our force, whatever it may be, must be detailed to guard our property from the Esquimaux while the other detachments are making their successive trips to the open water. So much for the shadow of the picture !

Two sides
to the
picture.

“But it has two sides ; and, whether from constitutional temperament or well reasoned argument, I find our state far from desperate. I cheer my comrades after this fashion :—

“1. I am convinced, from a careful analysis of our disease, that under its present aspects it is not beyond control. If with the aid of our present hunting resources, or by any providential accession to them, I can keep the cases from rapid depression, next month ought to give us a bear, and in the meantime Hans may find a deer ; and, with a good stock of fresh meat even for a few days, I can venture away from the vessel to draw supplies from the Esquimaux at Etah. I should have been there before this, if I could have been spared for forty-eight hours. We want nothing but meat.

"2. The coming of the sun will open appliances of moral help to the sick, and give energy to the hygienic resorts which I am arranging at this moment. Our miserable little kennel, where eighteen are crowded into the space of ten, is thoroughly begrimed with lampblack from the inevitable smoke of our fuel. The weather has prevented our drying and airing the sleeping-gear. The floor is damp from the conducted warmth of the sea-water under us, melting the ice that has condensed everywhere below. Sunshine and dry weather will cure all this. I have window-sash ready to fix over the roof and southern side of the galley-house; and our useless daguerreotype plates, tacked over wooden screens, make admirable mirrors to transfer the sun-rays into the cabin. I have manufactured a full-draught pipe for our smoky stove. Chloride of sodium must do the rest.

CHAPTER
XXXV.
The coming of the sun.

"3. While we live we will stick together; one fate shall belong to us all, be it what it may.

Resolution.

"There is comfort in this review; and, please God in his beneficent providence to spare us for the work, I will yet give one more manly tug to search the shores of Kennedy Channel for memorials of the lost; and then our duties over here, and the brig still prison-bound, enter trustingly upon the task of our escape.

Comfort and hope.

"*February 21, Wednesday.*—To-day the crests of the north-east headland were gilded by true sunshine, and all who were able assembled on deck to greet it. The sun rose above the horizon, though still screened from our eyes by intervening hills. Although the powerful refraction of Polar latitudes heralds his direct appearance by brilliant light, this is as far removed from the glorious tints of day as it is from the mere twilight. Nevertheless, for the past ten days we have been watching the growing warmth of our landscape, as it emerged from buried shadow, through all the stages of distinctness of an India-ink washing, step by step, into the sharp, bold definition of our desolate harbour scene. We have marked every dash of colour which the great Painter in his benevolence vouchsafed to us; and now the empurpled blues, clear, unmistakeable, the spreading lake, the flickering yellow; peering at all these, poor wretches! everything seemed superlative lustre and unsurpassable glory. We had so grovelled in darkness that we oversaw the light.

Re-appearance of sunshine.

Coloured skies.

"Mr. Wilson has caught cold and relapsed. Mr. Ohlsen, after

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XXXV.

A new
form of
disease.

a suspicious day, startles me by an attack of partial epilepsy—one of those strange indescribable spells, fits, seizures, whatever name the jargon gives them, which indicate deep disturbance. I conceal his case as far as I can ; but it adds to my heavy pack of troubles to anticipate the gloomy scenes of epileptic transport introduced into our one apartment. M'Gary holds his own.

Stove-
fitting.

"The work of stove-fitting is completed, and a new era marks its success. The increased draught which the prospective termination of our winter allows me to afford to our fuel brings an un-hoped-for piece of good fortune. We can burn hemp cable and cast-off running-gear. By the aid of a high chimney and a good regulating valve, the smoke passes directly into the open air, and tarred junk is as good as oak itself. This will save our trebling, and, what is more, the labour of cutting it. In truth, very little of it has been used up, scarcely more than a single streak. We have been too weak to cut it off. All our disposable force was inadequate last Saturday to cut enough for a day's fuel in advance.

"The sickness of a single additional man would have left us without fire."

CHAPTER XXXVI.

THE BENNESACK—A DILEMMA—THE SUN—END OF FEBRUARY—OUR CONDI-
TION—THE WARM SOUTH-EASTER—MOONLIGHT—THE LANDSCAPE.

"*February 22, Thursday.*—Washington's birthday: all our colours flying in the new sunlight. A day of good omen, even to the sojourners among the ice. Hans comes in with great news. He has had a shot at our bennesack, a long shot; but it reached him. The animal made off at a slow run, but we are sure of him now. This same deer has been hanging round the lake at the fiord through all the dim returning twilight; and so many stories were told of his appearance and movements, that he had almost grown into a myth. To-morrow we shall desire his better acquaintance.

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—
Washing-
ton's birth-
day.

"The Esquimaux call the deer when he is without antlers a bennesack. The greater number of these animals retain their antlers till the early spring, beginning to drop them about the return of sunshine; but some of the strongest lose them before the winter sets in. They are gregarious in their habits, and fond of particular localities. Where they have been gathered together year after year, the accumulation of discarded antlers is immense. They tell me at Holsteinberg, where more than four thousand reindeer-skins find a market annually, that on the favourite hunting-grounds these horns are found in vast piles. They bring little or nothing at Copenhagen, but I suppose would find a ready sale among the button-workers of England.

The ben-
nesack.

"*February 23, Friday.*—Hans was out early this morning on the trail of the wounded deer. Rhina, the least barbarous of our sledge-dogs, assisted him. He was back by noon, with the joyful news, 'The tukkuk dead only two miles up big fiord!' The cry found its way through the hatch, and came back in a broken huzzza from the sick men.

Good
news.

"We are so badly off for strong arms that our reindeer threatened to be as great an embarrassment to us as the auction drawn-elephant was to his lucky master. We had hard work with our dogs carrying him to the brig, and still harder, worn down as we were,

CHAPTER XXXVI.
 A dilemma. in getting him over the ship's side. But we succeeded, and were tumbling him down the hold, when we found ourselves in a dilemma, like the Vicar of Wakefield with his family picture. It was impossible to drag the prize into our little moss-lined dormitory; the *tossut* was not half big enough to let him pass, and it was equally impossible to skin him anywhere else without freezing our fingers in the operation. It was a happy escape from the embarrassments of our hungry little council to determine that the animal might be carved before skinning as well as he could be afterward; and in a very few minutes we proved our united wisdom by a feast on his quartered remains.

A feast. "It was a glorious meal, such as the compensations of Providence reserve for starving men alone. We ate, forgetful of the past, and almost heedless of the morrow; cleared away the offal wearily: and now, at 10 P.M., all hands have turned in to sleep, leaving to their commanding officer the solitary honour of an eight hours' vigil.

Size of the reindeer. "This deer was among the largest of all the northern specimens I have seen. He measured five feet one inch in girth, and six feet two inches in length, and stood as large as a two years' heifer. We estimated his weight at three hundred pounds gross, or one hundred and eighty net. The head had a more than usually cumbrous character, and a long waving tuft of white hair, that depended from the throat, gave an appearance of excessive weight to the front view.

"The reindeer is in no respect a graceful animal. There is an apparent want of proportion between his cumbrous shoulders and light haunch, which is ungainly even in his rapid movements. But he makes up for all his defects of form when he presents himself as an article of diet.

A disappointment. "February 24, *Saturday*.—A bitter disappointment met us at our evening meal. The flesh of our deer was nearly uneatable from putrefaction; the liver and intestines, from which I had expected so much, utterly so. The rapidity of such a change, in a temperature so low as minus 35°, seems curious; but the Greenlanders say that extreme cold is rather a promoter than otherwise of the putrefactive process. All the graminivorous animals have the same tendency, as is well known to the butchers. Our buffalo-hunters, when they condescend to clean a carcass, do it at once; they have

told me that the musk-ox is sometimes tainted after five minutes' exposure. The Esquimaux, with whom there is no fastidious sensibility of palate, are in the practice at Yotlik and Horses' Head, in latitude $73^{\circ} 40'$, even in the severest weather, of withdrawing the viscera immediately after death and filling the cavity with stones.

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Rapidity
of putre-
faction.

"February 25, Sunday.—The day of rest for those to whom rest can be; the day of grateful recognition for all! John, our volunteer cook of yesterday, is down: Morton, who could crawl out of bed to play baker for the party, and stood to it manfully yesterday, is down too. I have just one man left to help me in caring for the sick. Hans and Petersen, thank God! have vitality enough left to bear the toils of the hunt. One is out with his rifle, the other searching the traps.

Welcome
day of
rest.

"To-day, blessed be the Great Author of Light! I have once more looked upon the sun. I was standing on deek, thinking over our prospects, when a familiar berg, which had long been hid in shadow, flashed out in sun-birth. I knew this berg right well: it stood between Charlotte Wood Fiord and Little Willie's Monument. One year and one day ago I travelled toward it from Fern Rock to catch the sunshine. Then I had to climb the hills beyond, to get the luxury of basking in its brightness; but now, though the sun was but a single degree above the true horizon, it was so much elevated by refraction, that the sheen stretched across the trough of the fiord like a flaming tongue. I could not or would not resist the influence. It was a Sunday act of worship: I started off at an even run, and caught him as he rolled slowly along the horizon, and before he sank. I was again the first of my party to rejoice and meditate in sunshine. It is the third sun I have seen rise for a moment above the long night of an Arctic winter.

The sun
appears.

Running
to see the
sunshine.

"February 26, Monday.—William Godfrey undertook to act as cook to-day, but fainted before completing the experiment. The rest of us are little better; and now it looks as if we were to lose our best caterer, for Hans too shows signs of giving way to the scurvy.

"I have been at work for an hour, cutting up the large Manilla hawser for fuel. I do not know that I have any very remarkable or valuable quality; but I do know that, however multifarious may be my virtues, I am a singularly awkward hand in chopping up frozen cables.

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"February 28, Wednesday.—February closes : thank God for the lapse of its twenty-eight days ! Should the thirty-one of the coming March not drag us further downward, we may hope for a successful close to this dreary drama. By the tenth of April we should have seal ; and when they come, if we remain to welcome them, we can call ourselves saved.

Increase
of disease.

"But a fair review of our prospects tells me that I must look the lion in the face. The scurvy is steadily gaining on us. I do my best to sustain the more desperate cases as fast as I partially build up one, another is stricken down. The disease is perhaps less malignant than it was, but it is more diffused throughout our party. Except William Morton, who is disabled by a frozen heel, not one of our eighteen is exempt. Of the six workers of our party, as I counted them a month ago, two are unable to do out-door work, and the remaining four divide the duties of the ship among them. Hans musters his remaining energies to conduct the hunt. Petersen is his disheartened, moping assistant. The other two, Bonsall and myself, have all the daily offices of household and hospital. We chop five large sacks of ice, cut six fathoms of eight-inch hawser into junks of a foot each, serve out the meat when we have it, hack at the molasses, and hew out with crowbar and axe the pork and dried apples, provide the foul slop and cleansings of our dormitory ; and, in a word, skullduggery, and attend the sick. Added to this, for five nights running I have kept watch from 8 P.M. to 4 A.M., catching cat-naps as I could in the day without changing my clothes, but carefully waking every hour to note thermometers.

Labours
of those
still able
to work.

"Such is the condition in which February leaves us, with forty-one days more ahead of just the same character in prospect as the twenty-eight which, thank God ! are numbered now with the past. It is saddening to think how much those twenty-eight days have impaired our capacities of endurance. Yet there are resources—accidental perhaps, mercifully providential let me rather term them, contingent certainly, so far as our prescience goes—which may avail to save us : another reindeer of sound carcass, a constant succession of small game, supplies of walrus from the fugitive Esquimaux, or that which I most expect and hope for—a bear. We have already seen some tracks of these animals ; and last March there were many of them off Coffee Gorge and the

Hopes for
the future.

Labyrinth. If Hans and myself can only hold on, we may work our way through. All rests upon destiny, or the power which controls it.

"It will yet be many days before the sun overrides the shadow of Bessie Mountain and reaches our brig. The sick pine for him, and I have devised a clever system of mirrors to hasten his visit to their bunks. He will do more for them than all medicine besides.

CHAPTER XXXVI.
Pining for the sun

"That strange phenomenon, the warm south and south-east winds which came upon us in January, did not pass away till the middle of this month. And, even after it had gone, the weather continued for some days to reflect its influence. The thermometer seldom fell below -40° , and stood sometimes as high as -30° . It has been growing colder for the last three days, ranging from -46° to -51° ; and the abundant snows of the warm spell are now compacted hard enough to be traversible, or else dissipated by the heavy winds. There is much to be studied in these atmospheric changes. There is a seeming connection between the increasing cold and the increasing moonlight, which has sometimes forced itself on my notice; but I have barely strength enough to carry on our routine observations, and have no time to discuss phenomena.

Warm south-east winds.

Atmospheric changes.

"Two attempts have been made by my orders, since the month began, to communicate with the Esquimaux at their huts. Both were failures. Petersen, Hans, and Godfrey came back to denounce the journey as impracticable. I know better: the experience of my two attempts in the midst of the darkness satisfies me that at this period of the year the thing can be done; and, if I might venture to leave our sick-bay for a week, I would prove it. But there are dispositions and influences here around me, scarcely latent, yet repressed by my presence, which make it my duty at all hazards to stay where I am.

"*March 1, Thursday.*—A grander scene than our bay by moonlight can hardly be conceived. It is more dream-like and supernatural than a combination of earthly features.

The bay by moonlight.

"The moon is nearly full, and the dawning sunlight, mingling with hers, invests everything with an atmosphere of ashy grey. It clothes the gnarled hills that make the horizon of our bay, shadows out the terraces in dull definition, grows darker and

CHAPTER
XXXVI.Intense
moon-
light.

colder as it sinks into the fiords, and broods sad and dreary upon the ridges and measureless plains of ice that make up the rest of our field of view. Rising above all this, and shading down into it in strange combination, is the intense moonlight, glittering on every crag and spire, tracing the outline of the background with contrasted brightness, and printing its fantastic profiles on the snow-field. It is a landscape such as Milton or Dante might imagine,—inorganic, desolate, mysterious. I have come down from deck with the feelings of a man who has looked upon a world unfinished by the hand of its Creator."



THE GRAVES BY MOONLIGHT.

CHAPTER XXXVII.

OUR CONDITION—THE RESORTS—THE SICK—THE RAT IN THE INSECT-BOX—
 ANTICIPATIONS—HAN'S RETURN—FAMINE AT ETAH—MYOUK ON BOARD
 —WALRUS-TACKLE—THE MEAT DIET.

My journal for the beginning of March is little else than a chronicle of sufferings. Our little party was quite broken down. Every man on board was tainted with scurvy, and it was not common to find more than three who could assist in caring for the rest. The greater number were in their bunks, absolutely unable to stir.

CHAPTER
 XXXVII.
 Progress
 of disease.

The circumstances were well fitted to bring out the character of individuals. Some were intensely grateful for every little act of kindness from their more fortunate messmates; some querulous; others desponding; others again wanted only strength to become mutinous. Brooks, my first officer, as stalwart a man-o'-war's man as ever faced an enemy, burst into tears when he first saw himself in the glass. On Sunday, the 4th, our last remnant of fresh meat had been doled out. Our invalids began to sink rapidly. The wounds of our amputated men opened afresh. The region about our harbour ceased to furnish its scanty contingent of game. One of our huntsmen, Petersen, never very reliable in anything, declared himself unfit for further duty. Hans was unsuccessful: he made several wide circuits, and saw deer twice; but once they were beyond range, and the next time his rifle missed fire.

Characters
 of the
 men.

I tried the hunt for a long morning myself, without meeting a single thing of life, and was convinced, by the appearance of things on my return to the brig, that I should peril the morale, and with it the only hope, of my command by repeating the experiment.

An un-
 successful
 hunt.

I laboured, of course, with all the ingenuity of a well-taxed mind, to keep up the spirits of my comrades. I cooked for them all imaginable compounds of our unvaried diet-list, and brewed up flax-seed and lime-juice and quinine and willow-stems into an abomination which was dignified as beer, and which some were

CHAPTER
XXXVII.Fresh
meat
absolutely
necessary.

persuaded for the time to believe such. But it was becoming more and more certain every hour, that unless we could renew our supplies of fresh meat, the days of the party were numbered.

I spare myself, as well as the readers of this hastily-compiled volume, when I pass summarily over the details of our condition at this time.

I look back at it with recollections like those of a nightmare. Yet I was borne up wonderfully. I never doubted for an instant that the same Providence which had guarded us through the long darkness of winter was still watching over us for good, and that it was yet in reserve for us—for some, I dared not hope for all—to bear back the tidings of our rescue to Christian land. But how I did not see.

A desperate
venture.

On the 6th of the month I made the desperate venture of sending off my only trusted and effective huntsman on a sledge-journey to find the Esquimaux of Etah. He took with him our two surviving dogs in our lightest sledge. The Arctic day had begun to set in; the ice-track had improved with the advance of the season; and the cold, though still intense, had moderated to about 80° below the freezing point. He was to make his first night-halt at Anoatok; and, if no misadventure thwarted his progress, we hoped that he might reach the settlement before the end of the second night. In three or at furthest four days more, I counted on his return. No language can express the anxiety with which our poor suffering crew awaited it.

March 8, Thursday.—Hans must now be at the huts. If the natives have not gone south, if the walrus and bear have not failed them, and if they do not refuse to send us supplies, we may have fresh food in three days. God grant it may come in time!

Severe
illness.

"Stephenson and Riley are dangerously ill. We have moved Riley from his bunk, which, though lighter than most of the others, was dampened by the accumulations of ice. He is now upon a dry and heated platform close to the stove. Dr. Hayes's foot shows some ugly symptoms, which a change of his lodging-place may perhaps mitigate; and I have determined, therefore, to remove him to the berth Riley has vacated as soon as we can purify and dry it for him.

"In clearing out Riley's bunk, we found that a rat had built

his nest in my insect-box, destroying all our specimens. This is a grave loss ; for, besides that they were light of carriage, and might therefore have accompanied us in the retreat which now seems inevitable, they comprised our entire collection, and, though few in numbers, were rich for this stunted region. I had many spiders and bees. He is welcome to the whole of them, however, if I only catch him the fatter for the ration.

"*March 9, Friday.*—Strength going. It was with a feeling almost of dismay that I found how difficult it was to get through the day's labours,—Bonsall and myself the sole workers. After cleansing below, dressing and performing the loathsome duties of a nurse to the sick, cutting ice, cooking and serving messes, we could hardly go further.

Illness
from ex-
haustion.

"I realize fully the moral effects of an unbroken routine : systematic order once broken in upon, discomfort, despondency, and increase of disease must follow of course. It weighed heavily on my spirit to-day when I found my one comrade and myself were barely able to cut the necessary fuel. The hour of routine-night-fall finds us both stiff and ill at ease. Having to keep the night-watch until 6 A.M., I have plenty of time to revolve my most uncomfortable thoughts.

"Be it understood by any who may peradventure read of these things in my journal, that I express them nowhere else. What secret thoughts my companions may have are concealed from me and from each other ; but none of them can see as I do the alternative future now so close at hand : bright and comforting it may be ; but, if not, black and hopeless altogether.

Hopes and
fears for
the future.

"Should Hans come back with a good supply of walrus, and himself unsmitten by the enemy, our sick would rise under the genial specific of meat, and our strength probably increase enough to convey our boats to the North Water. The Refuge Inlet Polynia will hardly be more than forty miles from our brig, and, step by step, we can sledge our boats and their cargoes down to it. Once at Cape Alexander, we can support our sick by our guns, and make a regular Capua of the bird-colonies of Northumberland Island. This, in honest truth my yet unswerving and unshaken hope and expectation, is what I preach to my people ; and often in the silent hours of night I chat to some sleepless patient of cochlearia salads and glorious feasts of loons and eider-ducks.

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XXXVII.

Fears for
the future.

"On the other side, suppose Hans fails: the thought is horrible. The Spitzbergen victims were, at about this date, in better condition than we are: it was not until the middle of April that they began to die off. We have yet forty days to run before we can count upon the renovating blessings of animal life and restoring warmth. Neither Riley nor Wilson can last half that time without a supply of antiscorbutic food. Indeed, there is not a man on board who can hope to linger on till the spring comes unless we have relief.

"I put all this down in no desponding spirit, but as a record to look back upon hereafter, when the immediate danger has passed away, and some new emergency has brought its own array of cares and trials. My mind is hopeful and reliant: there is something even cheering in the constant rally of its energies to meet the calls of the hour.

"*March 10, Saturday.*—Hans has not yet returned, so that he must have reached the settlement. His orders were, if no meat be obtained of the Esquimaux, to borrow their dogs and try for bears along the open water. In this resource I have confidence. The days are magnificent.

The return
of Hans
and his
adven-
tures.

". . . . I had hardly written the above, when '*Bim, bim, bim!*' sounded from the deck, mixed with the chorus of our returning dogs. The next minute Hans and myself were shaking hands.

"He had much to tell us; to men in our condition Hans was as a man from cities. We of the wilderness flocked around him to hear the news. Sugar-teats of raw meat are passed around. 'Speak loud, Hans, that they may hear in the bunks.'

Changes
for the
worse at
Etah Bay.

"The 'wind-loved' Anootok he had reached on the first night after leaving the brig: no Esquimaux there of course; and he slept not warmly at a temperature of 53° below zero. On the evening of the next day he reached Etah Bay, and was hailed with joyous welcome. But a new phase of Esquimaux life had come upon its indolent, happy, blubber-fed denizens. Instead of plump, greasy children, and round-cheeked matrons, Hans saw around him lean figures of misery: the men looked hard and bony, and the children shrivelled in the hoods which cradled them at their mothers' backs. Famine had been among them; and the skin of a young sea-unicorn, lately caught, was all that remained to them of food. It was the old story of improvidence and its

miserable train. They had even eaten their reserve of blubber, and were seated in darkness and cold, waiting gloomily for the sun. Even their dogs, their main reliance for the hunt and for an escape to some more favoured camping-ground, had fallen a sacrifice to hunger. Only four remained out of thirty : the rest had been eaten.

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XXXVII.

Miserable
condition
of the
Esqui-
maux.

"Hans behaved well, and carried out my orders in their full spirit. He proposed to aid them in the walrus-hunt. They smiled at first with true Indian contempt ; but when they saw my Marston rifle, which he had with him, they changed their tone. When the sea is completely frozen, as it is now, the walrus can only be caught by harpooning them at their holes or in temporary cracks. This mode of hunting them is called *utok*. It requires great skill to enter the harpoon, and often fails from the line giving way in the struggles of the animal. They had lost a harpoon and line in this manner the very day before Hans' arrival. It required very little argument to persuade them to accept his offered company and try the effect of his cone-ball on the harpooned animal before he made good his retreat.

Mode of
hunting
walrus.

"I have not time to detail Hans' adventurous hunt, equally important to the scurried sick of Rensselaer and the starving residents of Etah Bay. Metek (the eider-duck) speared a medium-sized walrus, and Hans gave him no less than five Marston balls before he gave up his struggles. The beast was carried back in triumph, and all hands fed as if they could never know famine again. It was a regular feast, and the kablunah interest was exalted to the skies.

Successful
hunt.

"Miserable, yet happy wretches, without one thought for the future, fighting against care when it comes unbidden, and enjoying to the full their scanty measure of present good ! As a beast, the Esquimaux is a most sensible beast, worth a thousand Calibans, and certainly ahead of his cousin the Polar bear, from whom he borrows his pantaloons.

"I had directed Hans to endeavour to engage Myouk, if he could, to assist him in hunting. A most timely thought : for the morning's work made them receive the invitation as a great favour. Hans got his share of the meat, and returned to the brig accompanied by the boy, who is now under my care on board. This imp—for he is full of the devil—has always had a relishing fancy

Myouk
engaged
assistant
in hunt-
ing.

CHAPTER
XXXVII.

Myouk.

for the kicks and cuffs with which I recall the forks and teaspoons when they get astray ; and, to tell the truth, he always takes care to earn them. He is very happy, but so wasted by hunger that the work of fattening him will be a costly one. Poor little fellow ! born to toil, and necessity, and peril ; stern hunter as he already is, the lines of his face are still soft and childlike. I think we understand one another better than our incongruities would imply. He has fallen asleep in a deer skin at my feet.

State of
the sick.

"*March 11, Sunday.*—The sick are not as bright as this relief ought to make them. The truth is, they are fearfully down. Neither poor Wilson nor Riley could bear the meat, and they both suffered excessive pain with fever from a meal that was very limited in quantity. Even the stoutest could hardly bear their once solicited allowance of raw meat. I dispensed it cautiously, for I knew the hazards ; but I am sure it is to be the salvation of all of us. It gives a respite at any rate, and we could not in reason ask for more.

"Hans is making a walrus-harpoon and line ; and, as soon as he and Myouk have freshened a little, I shall send them back to Anatok in search of water-cracks. I am hard worked, getting little rest, yet gratefully employed, for my people seem to thank me. My cookery unfortunately shows itself on the smeared pages of my journal.

New fish-
ing tackle.

"*March 12, Monday.*—The new tackle is finished. Myouk had lost his ussuk-line upon the iceberg, but we supplied its place with a light Manilla cord. Hans made the bonework of his naligeit from the reindeer antlers which are abundant about the hills. They both rest to-night, and make an early start in the morning for their working ground.

Diet for
the sick.

"The less severe cases on our sick list are beginning to feel the influence of their new diet ; but Wilson and Brooks do not react. Their inclination for food, or rather their toleration of it, is so much impaired that they reject meat in its raw state, and when cooked it is much less prompt and efficient in its action. My mode of serving it out is this :—Each man has his saucer of thinly sliced frozen walrus heart, with limejuice or vinegar, before breakfast ; at breakfast, blood gravy with wheaten bread ; at dinner, steaks slightly stewed or fried, without limit of quantity ;

none at tea proper; but at 8 P.M. a renewed allowance of raw CHAPTER
slices and vinegar. It shows how broken down the party is, that XXXVII.
under the appetizing stimulations of an Arctic sky all our conva-
lescents and well men together are content with some seven
pounds of meat. Their prostrate comrades are sustained by
broth."



ESKIMAUX WATCHING A SEAL.

CHAPTER XXXVIII.

LINE OF OPEN WATER—AWAHTOK—HIS FIRST BORN—INSUBORDINATION—
THE PLOT—THE DEVELOPMENT—THE DESERTION.

CHAPTER
XXXVIII.

Departure
of Hans
and
Myouk.

"*March 13, Tuesday.*—I walked out with Hans and Myouk to give them God speed. Myouk had made me dress his frosted feet with rabbit-fur swaddled with alternate folds of flannel and warm skins. The little scamp had not been so comfortable since his accident. The dogs were only four in number, for 'Young Whitey' had been used up at Etah; but the load was light, and Myouk managed to get a fair share of riding. Hans, with the consequential air of 'big Injin,' walked ahead.

"I enjoined on them extreme caution as to their proceedings. They are to stretch over to the Bergy ground, of dismal associations, and to look for ice-cracks in the level channel way. Here, where I so nearly lost my life, they will seek bears and walrus, and, if they fail, work their way downward to the south. They sleep to-night in a snow-burrow, but hope to-morrow to reach Anoatok.

Sleep in a
snow drift.

"*March 15, Thursday.*—Hans and Myouk returned at eight o'clock last night without game. Their sleep, in a snowdrift about twenty miles to the northward, in a temperature of -54° , was not comfortable, as might be expected. The marvel is how life sustains itself in such circumstances of cold. I have myself slept in an ordinary canvas tent without discomfort, yet without fire, at a temperature of -52° .

An open
sea beyond
the ice.

"Myouk was very glad to get back to my warm quarters; but Hans was chopfallen at the dearth of game. They found no open water, but ice, ice, as far to the north and east as the eye could range from an iceberg elevation of eighty feet. It is the same opposite Anoatok; and, according to the Esquimaux, as far south of Cape Alexander as a point opposite Akotloowick, the first Baffin Bay huts. Beyond this, in spite of the severity of the winter, there is an open sea. It is in the month of March, if at all during the year, that the polynias are frozen up. Those of Refuge Bay

and Littleton were open during the whole of last winter; and, considering how very severe the weather is now and has been for months past, I question very much if such extensive areas as the so-called North Water ever close completely.

"Hans saw numerous tracks of bears; and I have no doubt now but that we can secure some of these animals before the seal season opens. One large beast passed in the night close by the snow-burrow in which our would-be hunters were ensconced. They followed his tracks in the morning; but the dogs were exhausted, and the cold was excessive, and they wisely returned to the brig.

" To-day we have finished burning our last Manilla hawser for fuel, the temperature remaining at the extraordinary mean of -52° . Our next resort must be to the trebling of the brig: Petersen—what remains of him, for the man's energies are gone—is now at work cutting it off. It is a hard trial for me. I have spared neither exertion, thought, nor suffering, to save the sea-worthiness of our little vessel, but all to no end: she can never bear us to the sea. Want of provisions alone, if nothing else, will drive us from her; for this solid case of nine-foot ice cannot possibly give way until the late changes of fall, nor then unless a hot summer and a retarded winter afterward allow the winds to break up its iron casing.

"*March 16, Friday.*—We have just a scant two days' allowance of meat for the sick. Hans has done his best; but there is nothing to be found on the hills; and I fear that a long hunting journey to the south is our only resource.

"Awahtok: I have often mentioned him as a plump, good-natured fellow. He was one of my attachés; by which I mean one of the many who stick to me like a plaster, in order to draw or withdraw a share of the iron nails, hoops, buttons, and other treasures which I represent. Awahtok always struck me as a lazy, pleasant sort of fellow, a man who would be glad to bask in sunshine if he could find any. He has a young wife of eighteen, and he himself is but twenty-two. His hut is quite cleanly, and we become his guests there with more satisfaction than at any other hostel in the village of Etah. Awahtok is evidently happy with his wife, and, the last time I saw him, was exulting over the first pledge of their union, a fine little girl. Well, all this about

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XXXVIII.

Tracks of
bears.

Want of
fuel.

Scarcity of
food.

Awahtok.

CHAPTER
XXXVIII.A child
buried
alive.

Awahtok is a prelude to the fact that he has just buried his daughter alive under a pile of stones.

"Myouk, who gave us the news to-day, when delicately questioned as to the cause of this little family arrangement, answered, with all simplicity of phrase, that the child had certain habits, common, I believe, to all the varieties of infancy.

"The month is gliding on, but without any contributions to science, though there are many things about me to suggest investigation.

Prepara-
tions for
hunting.

"It is as much as I can do to complete the routine of the days, and enable them to roll into each other. What a dreary death in life must be that of a maid or man of all work!

"*March 17, Saturday.*—I have been getting Hans ready for the settlement, with a five-sinnet line of Maury's sounding-twine. The natives to the south have lost nearly all their *allunaks* or walrus-lines by the accidents of December or January, and will be unable to replace them till the return of the seal. A good or even serviceable allunak requires a whole ussuk to cut it from. It is almost the only article whose manufacture seems to be conducted by the Esquimaux with any care and nicety of process. Our sounding-line will be a valuable contribution to them, and may, perchance, like some more ostentatious charities, include the liberal givers among those whom it principally blesses.

Suspicious
of two of
the men.

"*March 18, Sunday.*—I have a couple of men on board whose former history I would give something to know,—bad fellows both of them, but daring, energetic and strong. They gave me trouble before we reached the coast of Greenland; and they keep me constantly on the watch at this moment, for it is evident to me that they have some secret object in view, involving probably a desertion and escape to the Esquimaux settlements. They are both feigning sickness this morning; and, from what I have overheard, it is with the view of getting thoroughly rested before a start. Hans' departure with the sledge and dogs would give them a fine chance, if they could only waylay him, of securing all our facilities for travel; and I should not be surprised if they tried to compel him to go along with them. They cannot succeed in this except by force.

Necessary
watchful-
ness.

"I am acting very guardedly with them. I cannot punish till I have the evidence of an overt act. Nor can I trust the matter

to other hands. It would not do to depress my sick party by disclosing a scheme which, if it could be carried out fully, might be fatal to the whole of us. All this adds to my other duties those of a detective policeman. I do not find them agreeable.

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"*March 19, Monday.*—Hans got off at eleven. I have been all right in my suspicions about John and Bill. They were intensely anxious to get together this morning, and I was equally resolved to prevent any communication between them. I did this so ingeniously that they did not suspect my motive, by devising some outside duty for one or the other of them, and keeping his comrade in the plot at work under my own eye. Their impatience, and cunning little resorts, to procure the chance of a word in private, were quite amusing. It might be very far otherwise if they could manage to rob us of our dogs and gain the Netlik settlements.

Suspicious
verified.

"I hope the danger is over now. I shall keep the whole thing to myself; for, situated as we are, even the frustration of a mutinous purpose had best be concealed from the party.

"Petersen brought in to-day five ptarmigan, a cheering day's work, promising for the future, and allowing me to give an abundant meal to the sickest, and something to the sick. This is enough to keep up the health-working impression of the fresh meat diet.

A supply
of fresh
meat.

"*March 20, Tuesday.*—This morning I received information from Stephenson that Bill had declared his intention of leaving the brig to-day at some time unknown. John, being now really lame, could not accompany him. This Stephenson overheard in whispers during the night; and, in faithful execution of his duty, conveyed it to me.

"I kept the news to myself; but there was no time to be lost. William, therefore, was awakened at 6 A.M.—after my own night-watch—and ordered to cook breakfast. Meantime I watched him. At first he appeared troubled, and had several stealthily-whispered interviews with John: finally his manner became more easy, and he cooked and served our breakfast meal. I now felt convinced that he would meet John outside as soon as he could leave the room, and that one or both would then desert. I therefore threw on my furs and armed myself, made Bonsall and Morton acquainted with my plans, and then, crawling out of our dark pass-

The plot
discover-
ed.

CHAPTER
XXXVIII.The plot
defeated.

age, concealed myself near its entrance. I had hardly waited half an hour,—pretty cold work too,—when John crawled out, limping and grunting. Once fairly out, he looked furtively round, and then, with a sigh of satisfaction, mounted our rickety steps entirely cured of his lameness. Within ten minutes after he had gained the deck, the door opened again, and William made his appearance, booted for travel and clad in buffalo. As he emerged into the hold, I confronted him. He was ordered at once to the cabin; and Morton was despatched on deck to compel the presence of the third party; while Mr. Bonsall took his station at the door, allowing no one to pass out.

“In a very few minutes John crawled back again, as lame and exhausted as when he was last below, yet growing lamer rapidly as, recovering from the glare of the light, he saw the tableau. I then explained the state of things to the little company, and detailed step by step to the principals in the scene every one of their plans.

Bill con-
fesses and
is punish-
ed.

“Bill was the first to confess. I had prepared myself for the emergency, and punished him on the spot. As he rose with some difficulty, I detailed from the log-book the offences he had committed, and adduced the proofs.

He de-
serts.

“The short-handed condition of the brig made me unable to confine him; therefore I deemed it best to remove his handcuffs, to accept his protestations of reform, and put him again to work. He accepted my lenity with abundant thanks, went to duty, and in less than an hour deserted. I was hunting at the time, but the watch reported his having first been discovered on the ice-foot, and out of presenting distance. His intention undoubtedly is to reach Etah Bay, and, robbing Hans of sledge and dogs, proceed south to Netlik.

“Should he succeed, the result will be a heavy loss to us. The dogs are indispensable in the hunt and in transporting us to Anaktok. The step, however, is not likely to be successful. At all events, he is off, and I regret that duty prevents my rejoicing at his departure. John remains with us, closely watched, but apparently sincere in his protestations of absolute reform.”

CHAPTER XXXIX.

COLLOQUY IN THE BUNKS—WINTER TRAVEL—PREPARATIONS—REINDEER
FEEDING GROUNDS—TERRACED BEACHES—A WALK—OCCUPATIONS.

"*March 21, Wednesday.*—On this day one year ago Mr. Brooks and his party were frozen up in the hummocks. The habit of comparing the condition of two periods, of balancing the thoughts and hopes of one with the realized experience of the other, seems to me a very unprofitable one. It interferes with the practical executive spirit of a man, to mix a bright and happy past with a dim and doubtful present. It's a maudlin piece of work at best, and I'll none of it.

CHAPTER
XXXIX.
—
Compari-
sons.

"But listen to poor Brooks there, talking. He is sitting up, congratulating himself that he can nearly straighten his worst leg. 'Well, Mr. Ohlsen, I thought we would never get through them hummocks. You know we unloaded three times; now, I would not say it then, but seeing I am down I'll tell you. When we laid down the last pemmican-case, I went behind the ice, and don't remember nothing till Petersen called me into the tent. I think I must have strained something, and gone off like in a kind of fit.'

Colloquy
between
Brooks
and Ohl-
sen.

"Ohlsen, who is as self-absorbed a man as I ever knew, replies by stating that his boots pinched him; to which poor Brooks, never dwelling long on his own troubles, says in a quiet, soliloquizing way, 'Yes, and Baker's boots pinched him too; but it wasn't the boots, but the killing cold outside of them. There was Pierre,—his boots were moccasins, with deer-skin foot-rags, but he died of cold for all that; and there's Mr. Wilson and me, both hanging on in neither one way nor t'other; it's a question which of us lasts the longest.' M'Gary another bedridden, but convalescent, I hope, here raises himself on his elbows and checks Brooks for being so down in the mouth; and Brooks, after a growling rejoinder, improves his merry reminiscences by turning to me.

Reminis-
cences.

"'Captain Kane, five nights to come one year, you came in

CHAPTER
XXXIX.Remem-
brances of
past times.

upon four of us down as flat as flounders. I didn't look at your boots, but I know you wore Esquimaux ones. It was a hard walk for you, the greatest thing I ever heard tell off; but'—here he begins to soliloquize—'Baker's dead, Pierre's dead, and Wilson and I—'. 'Shut up, Brooks, shut up!' I broke in, whispering across the boards that separated our blankets; 'you will make the patients uncomfortable.' But no; the old times were strong upon him; he did not speak loud, but he caught me by both hands, and said, in his low bass, quiet tones, 'Doctor, you cried when you saw us, and didn't pull up till we jabbed the stopper down the whisky-tin and gave you a tot of it.'

Winter
travel.

"The general tone of the conversation around is like this specimen. I am glad to hear my shipmates talking together again, for we have of late been silent. The last year's battle commenced at this time a year ago, and it is natural the men should recall it. Had I succeeded in pushing my party across the bay, our success would have been unequalled; it was the true plan, the best-conceived, and in fact the only one by which, after the death of my dogs, I could hope to carry on the search. The temperatures were frightful, —40° to —56°; but my experience of last year on the rescue-party, where we travelled eighty miles in sixty odd hours, almost without a halt, yet without a frost-bite, shows that such temperatures are no obstacle to travel, provided you have the necessary practical knowledge of the equipment and conduct of your party. I firmly believe that no natural cold as yet known can arrest travel. The whole story of this winter illustrates it. I have both sledged and walked sixty and seventy miles over the roughest ice, in repeated journeys, at fifty degrees below zero, and the two parties from the south reached our brig in the dead of winter, after being exposed for three hundred miles to the same horrible cold.

Prospects
of the
desertor.

"The day has been beautifully clear, and so mild that our mid-day thermometers gave but 7°. This bears badly upon the desertion of Godfrey, for the probabilities are that he will find Hans's buffalo-robe at the hut, and thus sleep and be refreshed. In that case, he can easily reach the Esquimaux of Etah Bay, and may as easily seize upon the sledge-dogs, rifle, and trading articles. The consequences of such an act would be very disastrous; nearly all my hopes of lifting the sick, and therefore of escaping in boats

to the south, rest upon these dogs. By them only can we hunt bear and early seal, or rapidly transport ourselves to the tide-holes (*polynia*) of the spring, where we can add water-fowl to our game list. I am entirely without a remedy. We cannot pursue him, nor could we well have prevented his escape; it is the most culpable desertion I ever knew or heard of. Bonsall, Petersen, and myself are the only men now on board who can work for the rest. Save the warnings of a secret trouble, the fox gnawing under the jacket, I do better than the rest; but I bear my fox. Bonsall is evidently more disabled.

CHAPTER
XXXIX.
Evil consequences of the desertion.

"*March 22, Thursday.*—Petersen's ptarmigan are all gone (five of them), and of the rabbit but two rations of eight ounces each remain. We three, Bonsall, Petersen, and myself, have made up our minds to walk up Mary River Ravine until we reach the deer plains, and there separate and close in upon them. To-day is therefore a busy one, for we must prepare beforehand the entire daily requirements of the sick: the ice for melting water must be cut in blocks and laid near the stove; the wood, of which it requires one entire day to tear enough out for two days, must be chopped and piled within arm-reach; the bread must be cooked and the provisions arranged, before we can leave our comrades. When we three leave the brig, there will not be a single able man on board. M'Gary is able to leave his bed and stump about a little; but this is all. Need the dear home-folks, who may some day read this, wonder that I am a little careworn, and that I leave the brig with reluctance? Of we three God-supported men, each has his own heavy load of scurvy.

Want of food and plenty of work.

"*March 23, Friday.*—We started this morning, overworked and limping, rather as men ending a journey than beginning one. After four hours of forced walking, we reached the reindeer feeding grounds, but were too late; the animals had left at least two hours before our arrival. An extensive rolling country, rather a lacustrine plain than a true plateau, was covered with traces of life. The snow had been turned up in patches of four or five yards in diameter, by the hoofs of the reindeer, over areas of twenty or fifty acres. The extensive levels were studded with them; and wherever we examined the ground surface it was covered with grasses and destitute of lichens. We scouted it over the protruding syenites, and found a couple of ptarmigan and three hares; these we secured.

Start on a journey.

Reindeer feeding grounds.

CHAPTER
XXXIX.A long
walk.

"Our little party reached the brig in the evening, after a walk over a heavy snow-lined country of thirty miles. Nevertheless, I had a walk full of instructive material. The frozen channel of Mary River abounds in noble sections and scenes of splendid wildness and desolation. I am too tired to epitomize here my note-book's record; but I may say that the opportunity which I had to-day of comparing the terrace and boulder lines of Mary River and Charlotte Wood Fiord enables me to assert positively the interesting fact of a secular elevation of the crust, commencing at some as yet undetermined point north of 76° , and continuing to the Great Glacier and the high northern latitudes of Grinnell Land. This elevation, as connected with the equally well sustained depression of the Greenland coast south of Kingatok, is in interesting keeping with the same undulating alternation on the Scandinavian side. Certainly there seems to be in the localities of these elevated and depressed areas a systematic compensation.

Terraced
beaches.

"I counted to-day forty-one distinct ledges or shelves of terrace embraced between our water-line and the syenitic ridges through which Mary River forces itself. These shelves, though sometimes merged into each other, presented distinct and recognisable embankments or escarps of elevation. Their surfaces were at a nearly uniform inclination of descent of 5° , and their breadth either twelve, twenty-four, thirty-six, or some other multiple of twelve paces. This imposing series of ledges carried you in forty-one gigantic steps to an elevation of 480 feet; and, as the first rudiments of these ancient beaches left the granites which had once formed the barrier sea-coast, you could trace them passing from drift-strewn rocky barricades to cleanly-defined and gracefully-curved shelves of shingle and pebbles. I have studied of these terraced beaches at various points on the northern coast of Greenland. They are more imposing and on a larger scale than those of Wellington Channel, which are now regarded by geologists as indicative of secular uplift of coast. As these strange structures wound in long spirals around the headlands of the fiords, they reminded me of the parallel roads of Glen Roy,—a comparison which I make rather from general resemblance than ascertained analogies of causes.

A large
boulder.

"There is a boulder ten miles from our brig, say seven from the coast,—a mass of rounded syenite—at an altitude of 1100 feet,

resting, entirely isolated, upon coarse sandstone; its cubical contents cannot be less than sixty tons. Tired as I am by this hard walk, I feel that it has rewarded me well. It was too cold for the pocket-sextant; but I managed to sketch in such features of the opposite coast as were not marked in our charts of last August. I had a full view of the inland glacier throughout a linear trend of twenty miles. I can measure the profitless non-observing routine of the past winter by my joy at this first break in upon its drudgery. God knows I had laid down for myself much experimental observation, and some lines of what I hoped would be valuable travel and search; but I am thankful that I am here, able to empty a slop-bucket or rub a scurried leg.

CHAPTER XXXIX.

The inland glacier.

"My people had done well during my absence, and welcomed me back impressively.

"*March 24, Saturday.*—Our yesterday's ptarmigan gave the most sick a raw ration, and to-day we killed a second pair, which will serve them for to-morrow. To my great joy, they seem on that limited allowance to hold their ground. I am the only man now who scents the fresh meat without tasting it. I actually long for it, but am obliged to give way to the sick.

Ptarmigan shot.

"Yesterday's walk makes my scorbutized muscles very stiff. I went through my routine of labour, and, as usual in this strange disease, worked off my stiffness and my pain.

"Bonsall and Petersen are now woodmen, preparing our daily fuel. My own pleasant duty consists in chopping from an iceberg six half-bushel bagfuls of frozen water, carrying it to the brig and passing it through the scuttle into our den; in emptying by three several jobs some twelve to fifteen bucketfuls from the slop-barrel; in administering both as nurse and physician to fourteen sick men; in helping to pick eider-down from its soil as material for boat-bedding; in writing this wretched daily record, eating my meals, sleeping my broken sleeps, and feeling that the days pass without congenial occupation or improving pursuit.

Chopping wood and ice, &c.

"Hans has not returned. I give him two days more before I fall in with the opinion which some seem to entertain, that Godfrey has waylaid or seized upon his sledge. This wretched man has been the very bane of the cruise. My conscience tells me that almost any measure against him would be justifiable as a relief to the rest; but an instinctive aversion to extreme measures binds my hands."

Fears for Hans' safety.

CHAPTER XL.

THE DELECTABLE MOUNTAINS—REVIEW OF MARCH—THE DESERTER AGAIN
—HIS ESCAPE—GODFREY'S MEAT—CONVALESCENT.

CHAPTER
XL.

A cheer-
less Sun-
day.

"*March 25, Sunday.*—A hard-working, busy Sunday it has been, —a cheerless, scurvy-breeding day; and now by the midnight, which is as it were the evening of its continued light, I read the thermometers unaided except by the crimson fires of the northern horizon. It is, moreover, cold again, —37°, and the enemy has a harder grip on my grasshopper. Bonsall and Kane took the entire home-work on themselves to-day, that Petersen might have a chance of following rabbit-tracks up Mary River. He succeeded in shooting one large hare and a couple of ptarmigan,—thus giving our sick a good allowance for one day more.

Refrac-
tion.

"Refraction with all its magic is back upon us; the 'Delectable Mountains' appear again; and, as the sun has now worked his way to the margin of the north-western horizon, we can see the blaze stealing out from the black portals of these uplifted hills, as if there were truly beyond it a celestial gate.

The De-
lectable
Moun-
tains.

"I do not know what preposterous working of brain led me to compare this north-western ridge to Bunyan's Delectable Mountains; but there was a time, only one year ago, when I used to gaze upon them with an eye of real longing. Very often, when they rose phantom-like into the sky, I would plan schemes by which to reach them, work over mentally my hard pilgrimage across the ice, and my escape from Doubting Castle to this scene of triumph and reward. Once upon your coasts, O inaccessible mountains, I would reach the Northern Ocean and gather together the remnants of poor Franklin's company. These would be to me the orchards, and vineyards, and running fountains. The 'Lord of the Hill would see in me a pilgrim.' 'Leaning upon our staves, as is common with weary pilgrims when they stand to talk with any by the way,' we would look down upon an open Polar Sea, refulgent with northern sunshine.

"I did try to gain these summits; and when I think of poor

Baker's and Pierre's death, of my own almost fatalistic anxiety to cross the frozen sea, and of the terrible physical trial by which we saved our advance party, I cannot help dwelling, as something curious in its likeness, on another scene which Bunyan's explorers witnessed among the Delectable Mountains. 'They hied them first to the top of a hill called Error, which was very steep on the furthest side. So Christian and Hopeful looked down, and saw at the bottom several men dashed all to pieces by a fall which they had from the top.

CHAPTER
XL.
Bunyan's
explorers.

"Then said the shepherds, 'More than you see lie dashed to pieces at the bottom of this mountain—and *have continued to this day unburied*, for an example to others to take heed how they clamber too high, or how they come too near to the brink of this mountain.'"

"*March 31, Saturday.*—This month, badly as its daily record reads, is upon review a cheering one. We have managed to get enough game to revive the worst of our scurvy patients, and have enough in regular movement the domestic wheel of shipboard. Our troubles have been greater than at any time before; perhaps I ought to say they are greatest as the month closes; but whatever of misery Bonsall, and Petersen, and myself may have endured, it seems nearly certain now that at least four men will soon be able to relieve us. Brooks, M'Gary, Riley, and Thomas have seen the crisis of their malady, and, if secured from relapse, will recover rapidly. Ohlsen also is better, but slow to regain his powers. But the rest of the crew are still down.

Hopes of
relief.

"The game season, besides, is drawing nearer; and, once able to shoot seal upon the ice, I have little fears for the recovery of the larger portion of our party. Perhaps I am too sanguine; for it is clear that those of us who have till now sustained the others are beginning to sink. Bonsall can barely walk in the morning, and his legs become stiffer daily; Petersen gives way at the ankles; and I suffer much from the eruption, a tormenting and anomalous symptom, which affects eight of our sick. It has many of the characteristics of exanthemata; but is singularly persistent, varied in its phases, and possibly in its result dangerous.

Severe ill-
ness.

"The moral value of this toilsome month to myself has been the lesson of sympathy it has taught me with the labouring man. The fatigue, and disgust, and secret trials of the overworked

Lesson of
sympathy.

CHAPTER
XL.

brain are bad enough, but not to me more severe than those which follow the sick and jaded body to a sleepless bed. I have realized the sweat of the brow, and can feel how painful his earnings must be to whom the grasshopper has become a burden.

Re-ap-
pearance
of the
deserter.

"April 2, *Monday*.—At eleven o'clock this morning Mr. Bonsall reported a man about a mile from the brig, apparently lurking on the ice-foot. I thought it was Hans, and we both went forward to meet him. As we drew closer we discovered our sledge and dog-team near where he stood; but the man turned and ran to the south.

His story.

"I pursued him, leaving Mr. Bonsall, who carried a Sharpe rifle, behind; and the man, whom I now recognised to be Godfrey, seeing me advance alone, stopped and met me. He told me that he had been to the south as far as Northumberland Island; that Hans was lying sick at Etah, in consequence of exposure; that he himself had made up his mind to go back and spend the rest of his life with Kalutunah and the Esquimaux; and that neither persuasion nor force should divert him from this purpose.

His es-
cape.

"Upon my presenting a pistol, I succeeded in forcing him back to the gangway of the brig; but he refused to go further; and being loath to injure him, I left him under the guardianship of Mr. Bonsall's weapon while I went on board for irons; for both Bonsall and myself were barely able to walk, and utterly incapable of controlling him by manual force, and Petersen was out hunting; the rest, thirteen in all, are down with scurvy. I had just reached the deck when he turned to run. Mr. Bonsall's pistol failed at the cap. I jumped at once to the gun-stand; but my first rifle, affected by the cold, went off in the act of cocking, and a second, aimed in haste at long, but practicable distance, missed the fugitive. He made good his escape before we could lay hold of another weapon.

Anxiety
about
Hans.

"I am now more anxious than ever about Hans. The past conduct of Godfrey on board, and his mutinous desertion, make me aware that he is capable of daring wrong as well as deception. Hans has been gone more than a fortnight; he has been used to making the same journey in less than a week. His sledge and dogs came back in the possession of the very man whom I suspected of an intention to waylay him; and this man, after being driven

by menaces to the ship's side, perils his life rather than place himself in my power on board of her. CHAPTER XL.

"Yet he came back to our neighbourhood voluntarily, with sledge and dogs and walrus-meat! Can it have been that John, his former partner in the plot, was on the look-out for him, and had engaged his aid to consummate their joint desertion?"

"One thing is plain. This man at large and his comrade still on board, the safety of the whole company exacts the sternest observance of discipline. I have called all hands, and announced it as a standing order of the ship, and one to be observed inflexibly, that desertion, or the attempt to desert, shall be met at once by the sternest penalty. I have no alternative. By the body of my crew, sick, dependent, unable to move, and with everything to lose by the withdrawal of any portion of our efficient force, this announcement was received as a guarantee of their personal safety. But it was called for by other grave considerations. There is at this time on the part of all, men as well as officers, a warm feeling toward myself, and a strict, stanch fidelity to the expedition. But, for moral reasons which would control me, even if my impulse were different, I am constrained for the time to mingle among them without reserve, to act as a servant to their wants, to encourage colloquial equality and good humour; and, looking only a little way ahead to the juncture when a perfectly-regulated subordination will become essential, I know that my present stand will be of value. Necessity of strict discipline

"This sledge-load of Godfrey's meat, coming as it does, may well be called a Godsend: one may forgive the man in consideration of the good which it has done us all. We have had a regular feed all round, and exult to think we need no catering for the morrow. It has cheered our downhearted sick men wonderfully. Our brew of beer, too,—the 'Arctic Linseed Mucilage Adaptation,'—turns out excellent. Our grunts and growls are really beginning to have a good-natured twang. Our faces lessen as our shadows promise to increase. I think I see a change which points to the happier future. Value of the supply of fresh meat.

"Our sick, however, are still non-operatives, and our one room is like the convalescent ward of an hospital, with Bonsall and myself for the only nurses." Convalescent ward.

CHAPTER XLI.

ROUTINE—GETTING UP—BREAKFAST—WORK—TURNING IN—HANS STILL
MISSING—THE DETERMINATION.

CHAPTER "April 3, Tuesday.—To-day I detained Petersen from his hunt,
XLI. and took a holiday rest myself,—that is to say, went to bed and
—sweated: to-morrow I promise as much for Bonsall.

"While here in bed I will give the routine of a day in this
spring-time of year:—

Getting
up.

"At 7.30 call 'all hands;' which means that one of the well
trio wakes the other two. This order is obeyed slowly. The com-
mander confesses for himself that the breakfast is well-nigh upon
table before he gets his stiff ankles to the floor. Looking around,
he sees the usual mosaic of sleepers as ingeniously dovetailed and
crowded together as the campers-out in a buffalo-bag. He winds
his way through them, and, as he does so, some stereotyped
remarks are interchanged. 'Thomas!'—our ex-cook, now side
by side with the first officer of the expedition,—'Thomas, turn
out!' 'Eugh-ng, sir.' 'Turn out; get up.' 'Ys-sir;' (sits bolt
upright, and rubs his eyes.) 'How d'you feel, Mr. Ohlsen?'
'Better, sir.' 'How've you passed the night, Mr. Brooks?' 'Mid-
dlin', sir.' And, after a diversified series of spavined efforts, the
mystical number forms its triangle at the table.

Breakfast
table.

"It still stands in its simple dignity, an unclothed platform of
boards, with a pile of plates in the centre. Near these is a vir-
tuoso collection of cups grouped in a tumulus or cairn, commencing
philosophically at the base with heavy stoneware, and ending with
battered tin: the absolute pinnacle a debased dredging-box, which
makes a bad goblet, being unpleasantly sharp at its rim. At one
end of this table, partly hid by the beer-barrel, stands Petersen;
at the side, Bonsall; and a lime-juice cask opposite marks my
seat. We are all standing: a momentary hush is made among the
sick: and the daily prayer comes with one heart:—'Accept our
gratitude, and restore us to our homes.'

"The act of devotion over, we sit down, and look—not at the breakfast, but at each other. CHAPTER
XLI.

"It may sound absurd to those who cannot understand the narrowing interest which we three availables feel in our continued mutual ability, for me to say that we spend the first five minutes in a detail of symptoms. The state of each man's gums, and shins, and ankles, his elbows, loins, and kidneys, is canvassed minutely and compared with his yesterday's report: the recital might edify a specialist who was anxious to register the Protean indications of scurvy. It is sometimes ludicrous, but always sad. Detail of
symptoms
of illness.

"Now for the bill of fare. 'Who cooked?' I am describing a gala-day. 'It was Morton: he felt so much better that he got up at six; but he caved in soon after:'—

"First, coffee, great comforter to hard-worked men; one part of the genuine berry to three of navy-beans; next, sugar; what complex memories the word brings back!—the veritable sugar has been long ago defunct; but we have its representative molasses twice a week in our tea. Third, butter; there it is in a mutilated vegetable-dish; my own invention, melted from salt beef and washed in many waters: the unskilled might call it tallow. Fourth, a real delicacy, not to be surpassed in court or camp, for Morton was up to see to it,—a pile of hot rolls of fine Virginia flour. What else? Nothing else: the breakfast resolves itself into bean-coffee, tallow, and hot bread. Yet a cordial meal it is. I am sorry to hurry over it so uncourteously, for I could dwell with Charles Lamb's pensive enthusiasm upon the flesh-pots; but I have been longer in describing the feast than it takes us to dispose of it. I hurry on with the interesting detail. Dinner is breakfast, with the beans converted into soup instead of coffee; and supper boasts of stewed apples. Bill of fare

"Work commences at nine. Petersen is off with his gun, and the two remaining dearly-beloved Rogers arrange their carte: one makes the round of the sick and deals out their daily allowance of raw meat; the other goes to cutting ice. Those who can sit in bed and work, pick eider-down or cotton, for coverlets to our boat-bedding on the escape; others sew canvas bags for the same purpose; and Brooks balls off twine in order to lay up 'small stuff.' Work.

"At times when the sun comes out very brightly, Brooks and Wilson get permission to go on deck. One of us assists them,

CHAPTER
XLI.Rejoicing
in the day-
light.

and, by the aid of creeping and crawling, these poor cripples manage to sit upon the combings of the hatch and look around in the glorious daylight. The sight seldom fails to affect them. There are emotions among rude, roughly-nurtured men which vent themselves in true poetry. Brooks has about him sensibilities that shame me.

A time of
rest.

"The afternoon, save to the cook, is a season of rest; a real lazy, lounging interval, arrested by the call to supper. The coming night-watch obliges me to take an evening cat-nap. I state this by way of implying that I never sleep o' daytimes.

After sup-
per.

"After supper, we have a better state of things than two weeks ago. Then the few tired outworkers were regaled by the groans and tossings of the sick. There was little conversation, and the physiognomy of our smoke-blackened little den was truly dismal. Now daylight pours in from the scuttle, the tea-kettle sings upon the stove, the convalescents rise up on their elbows and spin merry yarns. We are not yet sufficiently jolly for cards; but we are sufficiently thankful to do without them. At nine, silence a'most unbroken prevails throughout our dormitory, and the watch-officer slips on his bear-skin, and, full of thoughts of to-morrow, resigns himself to a round of little routine observances, the most worthless of which is this unbroken record of the changing days.

Hans still
missing.

"*April 6, Friday.*—Our little family is growing more and more uneasy about Hans. William reported him sick at Etah; but we had no faith in this story, and looked on his absence as merely the result of fatigue from exposure. But there really seems ground for serious apprehension now. My own fear is that William may have conveyed to him some false message, or some threat or reproof, using my name, and in this way deterred him from returning. Hans is very faithful; but he is entirely unaware of William's desertion, and he is besides both credulous and sensitive. I am attached to Hans: he has always been a sort of henchman, a body-guard, the companion of my walks. He is a devout Moravian; and when the party withdrew from the brig last fall he refused to accompany them on grounds of religious obligation. The boy has fixed, honourable principles. Petersen thinks that he ought to be sent for, but he has not thought out the question who is to be sent. Bonsall is too lame to travel; Petersen himself is infinitely

the best fitted, but he shirks the duty, and to-day he takes to his bed: I alone am left.

"Clearly duty to this poor boy calls me to seek him, and clearly duty to these dependent men calls upon me to stay. Long and uncomfortably have I pondered over these opposing calls, but at last have come to a determination. Hans was faithful to me: the danger to him is imminent; the danger to those left behind only contingent upon my failure to return. With earnest trust in that same supervising Agency which has so often before in graver straits interfered to protect and carry me through, I have resolved to go after Hans.

"The orders are given. In three hours I will be equipped and ready to take advantage of the first practicable moment for the start. It makes me write gravely; for I am far from well, very far from strong, and am obliged to drive our reduced team twice seventy miles. The latter half of the journey I shall have to do entirely on foot, and our lowest night-temperatures are under -40° ."

CHAPTER
XLI.Conflict-
ing duties.The de-
cision.

CHAPTER XLII.

JOURNEY AFTER HANS—ESQUIMAUX SLEDGING—HANS FOUND—RECEPTO AMICO—EXPLANATION—FURTHER SEARCH—MATURING PLANS—CHANCES OF ESCAPE—FOOD PLENTY—PAULIK—FAMINE AMONG THE ESQUIMAUX—EXTINCTION—LIGHT HEARTS—DESERTER RECOVERED.

CHAPTER XLII. "April 10, Tuesday.—I left the brig at 10½ A.M., with but five dogs and a load so light as to be hardly felt.

Journey after Hans. "It requires some suggestive incident to show us how we have gradually become assimilated in our habits to the necessities of our peculiar life. Such an incident I find in my equipment. Compare it with similar sledge-outfits of last winter, and you will see that we are now more than half Esquimaux. It consists of—

- Outfit. "1. One small sledge, five feet six by two.
"2. An extra jumper and sack-pants for sleeping.
"3. A ball of raw walrus-meat.—This is all.

"The sledge is portable, and adapted to jump over the chasms of the land-ice, and to overturn with impunity, save to the luckless driver. It has two standards, or, as we call them, "up-standers," which spring like elbows from its hinder extremity.

"They serve as handles, by which, running or walking behind, you guide the sledge, lift it over rugged places, or rest yourself and your dogs while in progress together.

"The extra jumper is a bear-skin jacket, or rather shirt, which, after being put on is overlapped at the waist by a large pair of footed trousers. No winter traveller should be without these:—at temperatures below —25° or —30° they are invaluable. Blanket-bags are nearly useless below —30°, in a gale of wind; it riddles through them.

Provisions. "The ball of raw meat is made by chopping into inch-pieces walrus or other meat, and pouring among it hot tallow, by which the pieces are prevented from freezing too hard, so that you can readily cut out your meal as it is required. A little butter, if you have some, will contribute to soften it: olive-oil perhaps would be better; but without some such luxurious additions a man in two

great a hurry for dinner might be apt to risk his teeth. In the present journey, having nothing but tallow, I made my meat-ball like a twist-loaf, and broke it with a stone. CHAPTER XLII.
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"I have no incidents to record in the shape of disaster. My dogs were in excellent condition, and the ice good for travel. The real incident of the journey was its early success. My dogs, in spite of low feeding, carried me sixty-four miles in eleven hours. A rapid
sledge
journey.

"Faithful Hans! Dear good follower and friend! I was out on the floes just beyond the headlands of our old 'Refuge Harbour,' when I made out a black speck far in to shoreward. Refraction will deceive a novice on the ice; but we have learned to baffle refraction. By sighting the suspected object with your rifle at rest, you soon detect motion. It was a living animal—a man. Shoreward went the sledge; off sprang the dogs ten miles an hour, their driver yelling the familiar provocative to speed, 'Nannook! nannook!' 'A bear! a bear!' at the top of his lungs. Hans
found

"There was no room for mistaking the methodical seal-stalking gait of Hans. He hardly varied from it as we came near; but in about fifteen minutes we were shaking hands and jabbering, in a patois of Esquimaux and English, our mutual news. The poor fellow had been really ill: five days down with severe pains of limbs have left him still a 'little veek;' which means with Hans well used up. I stuck him on the sledge and carried him to Anootok.

"Fortunately Anootok for once belied its name: there was no wind, and the sun broke down upon us with a genial $+14^{\circ}$, although the shade gave -25° . I had brought with me, expecting the boy might need it, a small mustard-bottle of our treasured molasses, and a little tea. We keep a camp-kettle at this hut, and both of us wore in our belts the inseparable tin-cup. How the boy enjoyed his hot tea! Metek had given him a few lumps of frozen walrus-liver, the very best provision for cold travel: our appetites were good; and, the two thus fitly harmonizing, we crunched away right merrily. A welcome
tea.

"Hans reached Etah with Myouk two days after leaving us, and at once commenced his hunt. In the course of five days of most hazardous ice-range, he killed two fine young animals; his three Hans'
story.

CHAPTER
XLII.Hans
among the
Esqui-
maux.

His illness.

companions in the hunt killing only three. He had the great advantage of my powerful Marston rifle, but his tackle was very inferior. Our sinnet-laid twine would not stand the powerful struggles of the beast, and on one occasion parted while fast in a large female. Still his success must have acquired for him the good-will of these people, for in the 'flens' or hunting-division of spoil they gained by his companionship.

"In the sickness that followed his long exposure, he tells me he was waited on most carefully at the settlement. A young daughter of Shunghu elected herself his nurse; and her sympathies and smiles have, I fear, made an impression on his heart which a certain damsel near Uppernavik might be sorry to hear of.

William's
designs.

"Hans cached part of his meat at Littleton Island, after sending a load by William to the brig. He had no difficulty, I find, in penetrating this man's designs. He was indeed urged by him to agree that they should drive off together to the south, and so leave us sledgeless. Upon Hans' refusal, he tried to obtain his rifle; but this of course was easily prevented. He consented at last to take up the meat, with a view of making terms with me, and securing probably a companion. Baffled in this, as I have mentioned, he made his escape a second time to Etah. There I might be content to leave him, an unwelcome guest, and dependent upon the Esquimaux. Strong and healthy as he is, our daily work goes on better for his absence, and the ship seems better when purged by his desertion; but the example is disastrous, and, cost what it may, I must have him back.

Hans'
starts
again.Dreary
prospects.

"April 11, Wednesday.—Hans started again to bring back the meat from Littleton Island cache. If he feels strengthened, I have given him a commission to which I attach the greatest importance.

"My hopes of again undertaking a spring journey to Kennedy Channel were strong in the early months of the winter; but, as our dogs died away a second time, and the scurvy crept in upon us, I became sad and distrustful as to the chance of our ever living to gain the open water. The return of the withdrawing party absorbed all my thoughts. They brought news of disaster, starvation, and loss of dogs among the natives. Our prospects seemed at the lowest ebb. Still I cherished a secret hope of making another journey, and had determined to undertake it alone, with our poor remnant of four dogs, trusting to my rifle for provision.

In fact, this continuation of my one great duty has been constantly before me, and I now think that I can manage it. Thus:—The Esquimaux have left Northumberland Island, and are now near Cape Alexander, as a better hunting-ground. Kalutunah, the best and most provident man among them, has managed to save seven dogs. I have authorized Hans to negotiate *carte-blanc*, if necessary, for four of these, even as a loan; promising as a final bait the contingent possession of my whole team when I reach the open water on my return. On this mission I send my '*fides Achates*,' and await his return with anxious hope.

CHAPTER
XLII.
Expedition in
search of
dogs.

"I have seen, almost from the first day of our imprisonment by the ice, the probability, if nothing more, that we might never be able to liberate the ship. Elsewhere in this journal I have explained by what construction of my duty I urged the brig to the north, and why I deemed it impossible honourably to abandon her after a single season. The same train of reasoning now leads me to mature and organize everything for an early departure without her, in case she cannot be released. My hopes of this release are very feeble; and I know that when it does occur, if ever, the season will, like the last, be too far advanced for me to carry my people home. All my experience, carefully reviewed from my note-books, and confirmed by consultation with Petersen, convinces me that I must start early, and govern my boat and sledges by the condition of the ice and hunting-grounds.

Prospect of
liberating
the ship.

"Whatever of executive ability I have picked up during this brain and body-wearying cruise warns me against immature preparation or vacillating purposes. I must have an exact discipline, a rigid routine, and a perfectly-thought-out organization. For the past six weeks I have, in the intervals between my duty to the sick and the ship, arranged the schedule of our future course. Much of it is already under way. My journal shows what I have done, but what there is to do is appalling.

Necessity
of rigid
routine
and discipline.

"I state all this to show how much I hazard and possibly sacrifice by my intended journey to the north, and to explain why I have so little time and mood for scientific observation or research. My feelings may be understood when I say that my carpenter and all the working men, save Bonsall, are still on their backs; and that a month's preliminary labour is needed before I can commence the heavy work of transporting my three boats over the ice to the

Continued
illness of
the men.

CHAPTER
XLII.

Hops of
the ice
breaking
up.

State of
the sick.

The return
of Hans
with food
in plenty.

anticipated water. As the moment of my writing this, the water is over eighty miles in a straight line from our brig.

"*April 12, Thursday.*—The wind still blowing as yesterday, from the southward and eastward. This is certainly favourable to the advance of open water. The long swell from the open spaces in Baffin's Bay has such a powerful effect upon the ice, that I should not wonder if the floes about Lifeboat Cove, off M'Gary Island, were broken up by the first of May.

"Our sick have been without fresh food since the 5th; but such is the stimulus imparted by our late supply that they as yet show no backward symptoms. M'Gary, and Ohlsen, and Brooks, and Riley, sun themselves daily, and are able to do much useful jobbing. Thomas begins to renew me in cooking; Riley to take a spell at the slops; Morton cooks breakfast, and, aided by M'Gary and Ohlsen, has already finished one worsted quilted camp-blanket, with which I intend to cover our last remaining buffalo-skins. Wilson comes on slowly; Dr. Hayes' toe begins to heal; Sontag is more cheery. With the exception of Goodfellow, John, and Whipple, I can feel that those of my little household are fast becoming men again.

"*April 13, Friday.*—Our sick—which still means all hands, except the cook, which means the captain—entered this morning on their eighth day of fasting from flesh. One or two have been softening about the gums again for some days past, and all feel weak with involuntary abstinence. The evening comes, and 'Bim! bim! bim!' sounds upon the deck: Hans is back with his dogs. Rabbit-stew and walrus-liver!—a supper for a king!

"This life of ours—for we have been living much in this way for nine months past—makes me more charitable than I used to be with our Esquimaux neighbours. The day provides for itself; or, if it does not, we trust in the morrow, and are happy till to-morrow disappoints us. Our smoke-dried cabin is a scene worth looking at: no man with his heart in the right place but would enjoy it. Every man is elbowed up on his platform, with a bowl of rich gravy-soup between his knees, and a stick of frozen liver at his side, gorging himself with the antiscorbutic luxuries, and laughing as if neither ice nor water were before him to traverse.

"Hans has brought Metek with him, and Metek's young nephew, a fine-looking boy of fourteen.

"I do not know whether I have mentioned that, some little time before our treaty of alliance and mutual honesty, Metek stole the gunwale of the *Red Eric*. He has been, of course, in something of uncertainty as to his political and personal relations, and his present visit to the nalegak with a noble sledge-load of walrus-meat is evidently intended as a propitiation for his wrong.

"They are welcome, the meat and Metek, abundantly. He is the chieftain of Etah, and, as such, a vassal of him of Aūnatok, the 'Open Place,' which we have named Rensselaer Harbour. He speaks sadly, and so does Hans, of the fortunes of the winter.

"The Netelik settlement on Northumberland Island was already, when we heard of it last, the refuge of the natives from the further South, even beyond Wolstenholme. It has always been a hunting stronghold; but, as the winter darkness advanced, the pressure of numbers combined with their habitual improvidence to dissipate their supplies.

"It seems that the poor wretches suffered terribly,—even more than our neighbours of Etah Bay. Their laws exact an equal division; and the success of the best hunters was dissipated by the crowds of feeble claimants upon their spoils. At last the broken nature of the ice-margin, and the freezing-up of a large zone of ice, prevented them from seeking walrus. The water was inaccessible, and the last resource pressed itself upon them. They killed their dogs. Fearful as it sounds, when we think how indispensable the services of these animals are to their daily existence, they cannot now number more than twenty in the entire ownership of the tribe. From Glacier South to Glacier North, from Glacier East to the rude ice-bound coast which completes the circuit of their little world, this nation have but twenty dogs. What can they hope for without them!

"I can already count eight settlements, including about one hundred and forty souls. There are more, perhaps, but certainly not many. Out of these I can number five deaths since our arrival; and I am aware of hardships and disasters encountered by the survivors, which, repeated as they must be in the future, cannot fail to involve a larger mortality. Crime combines with disease and exposure to thin their numbers: I know of three murders within the past two years; and one infanticide occurred only a few months ago. These facts, which are open to

CHAPTER
XLII.
Metek.

Sufferings
of the Es-
quimaux.

Diminu-
tion of
their num-
ber.

CHAPTER
XLIII.

The Esqui-
maux
tribes
rapidly
dying out.

my limited sources of information, cannot, of course, indicate the number of deaths correctly. They confirm, however, a fearful conclusion which these poor wretches have themselves communicated to us,—that they are dying out; not lingeringly, like the American tribes, but so rapidly as to be able to mark within a generation their progress toward extinction. Nothing can be more saddening, measured by our own sensibilities, than such a conviction; but it seems to have no effect upon this remarkable people. Surrounded by the graves of their dead, by huts untenanted, yet still recent in their memory as homesteads, even by caches of meat which, frozen under the snow by the dead of one year, are eaten by the living of the next, they show neither apprehension nor regret. Even Kalutunah—a man of fine instincts, and, I think, of heart—will retain his apathy of face as, by the aid of Petersen, our interpreter, I point out to him the certainty of their speedy extinction. He will smile in his efforts to count the years which must obliterate his nation, and break in with a laugh as his children shout out their ‘Amna Ayah,’ and dance to the tap of his drum.

Mirth in
misery.

“How wonderful is all this! Rude as are their ideas of numbers, there are those among this merry-hearted people who can reckon up to the fate of their last man.

A melan-
choly mi-
gration.

“After Netelik, the receptacle of these half-starved fugitives, had been obliged itself to capitulate with famine, the body corporate determined, as on like occasions it had often done before, to migrate to the seats of the more northern hunt.

“The movements of the walrus, and the condition of the ice, seem to be known to them by a kind of instinct; so, when the light came, they harnessed in their reserve of dogs, and started for Cape Alexander.

“It could not, one might suppose, have been a very cheerful migration,—women, children, and young babies thrusting themselves into a frozen wilderness at temperatures below -30° , and sometimes verging on -60° . But Hans, with a laugh that seemed to indicate some exquisite point of concealed appreciation of the ludicrous, said they travelled generally in squads, singing ‘Amna Ayah,’ and, when they reached any of the halting-huts, ate the blubber and liver of the owners and danced all night. So at last they came to Utak-soak, the ‘great caldron,’ which we call

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Cape Alexander, and settled down at Peteravik, or the 'Welcome Halt.'

"At first game was scarce here also; but the season came soon when the female walrus is tending her calf on the ice, and then, but for the protracted exposure of the hunt, there was no drawback to its success. They are desperately merry now, and seem to have forgotten that a second winter is ahead of them. Hans said, with one of his quiet laughs, 'One half of them are sick, and cannot hunt: these do nothing but eat, and sing, "Amna Ayah."' "

"April 18, *Wednesday*.—I am just off a two hundred miles' journey, bringing back my deserter, and, what is perhaps quite as important, a sledge-load of choice walrus-cuts. CHAPTER XLII.
The "Wel-
come
Halt."

"I found from Hans that his negotiation for the dogs had failed, and that unless I could do something by individual persuasion, I must give up my scheme of a closing exploration to the north. I learned, too, that Godfrey was playing the great man at Etah, defying recapture; and I was not willing to trust the influence he might exert on my relations with the tribe. I determined that he should return to the brig. Journey to
bring back
a deserter.

"I began by stratagem. I placed a pair of foot-cuffs on Metek's sledge, and, after looking carefully to my body-companion six-shooter, invited myself to ride back with him to Etah. His nephew remained on board in charge of Hans, and I disguised myself so well in my nessak that, as we moved off, I could easily have passed for the boy Paulik, whose place I had taken. Successful
stratagem

"As our eighty miles drew to an end, and that which we call the settlement came close in view, its population streamed out to welcome their chief's return. Among the first and most prominent was the individual whom I desired to meet, waving his hand and shouting 'Tima!' as loudly as the choicest savage of them all. An instant later and I was at his ear, with a short phrase of salutation and its appropriate gesture. He yielded unconditionally at once, and, after walking and running, by turns, for some eighty miles before the sledge, with a short respite at Anootok, is now a prisoner on board. The de-
serter a
prisoner.

"My remaining errand was almost as successful."

CHAPTER XLIII.

HARTSTENE BAY—ESQUIMAUX DWELLINGS—A CROWDED INTERIOR—THE
NIGHT'S LODGING—A MORNING REPAST—MOURNING FOR THE DEAD—
FUNERAL RITES—PENANCE.

CHAPTER
XLIII.

Hartstene
Bay.

ETAH is on the north-eastern curve of Hartstene Bay, facing to the south and west. As you stretch over from the south point of Littleton Island to the main, the broken character of the ice subsides into a traversable plain, and the shore-scenery assumes a singular wildness. The bottom series of plutonics rises to grand and mountainous proportions, and in the back-ground, soaring above these, are the escalated green-stones of the more northern coast. At the very bottom of the bay are two perforations, one a fortress-mantled fiord, the other a sloping ravine: both are occupied by extensions of the same glacier.

Etah.

The fiord points to Peteravik, where Kalutunah and his hungry southern corps have now taken up their quarters; the other is the oft-mentioned settlement of Etah. A snow-drift, rising at an angle of forty-five degrees, till it mingles with the steep sides of a mountain, is dotted by two dark blemishes upon its pure white. Coming nearer, you see that the dirt-spots are perforations of the snow: nearer still, you see above each opening a smaller one, and a covered roof connecting them. These are the doors and windows of the settlement; two huts and four families, but for these vent holes, entirely buried in the snow.

Reception
by the
natives.

The inmates of the burrows swarmed around me as I arrived. "Nalegak! nalegak! tima!" was yelled in chorus; never seemed people more anxious to propitiate, or more pleased with an unexpected visit. But they were airily clad, and it blew a north-wester; and they soon crowded back into their ant-hill. Mean-time preparations were making for my in-door reception, and after a little while Metek and myself crawled in on our hands and knees, through an extraordinary tossut thirty paces long. As I emerged on the inside, the salute of "nalegak" was repeated with an increase of energy that was anything but pleasant.

There were guests before me,—six sturdy denizens of the neighbouring settlement. They had been overtaken by the storm while hunting, and were already crowded upon the central dais of honour. They united in the yell of welcome, and I soon found myself gasping the ammoniacal steam of some fourteen vigorous, amply-fed, unwashed, unclothed fellow-lodgers. I had come somewhat exhausted by an eighty miles' journey through the atmosphere of the floes : the thermometer inside was at $+90^{\circ}$, and the vault measured fifteen feet by six. Such an amorphous mass of compounded humanity one could see nowhere else : men, women, children, with nothing but their native dirt to cover them, twined and dovetailed together like the worms in a fishing-basket.

No hyperbole could exaggerate that which in serious earnest I give as the truth. The platform measured but seven feet in breadth, by six in depth, the shape being semi-elliptical. Upon this, including children and excluding myself, were bestowed thirteen persons.

The kotluk of each matron was glowing with a flame sixteen inches long. A flipper-quarter of walrus, which lay frozen on the floor of the netek, was cut into steaks ; and the kolopsuts began to smoke with a burden of ten or fifteen pounds apiece. Metek, with a little amateur aid from some of the sleepers, emptied these without my assistance. I had the most cordial invitation to precede them ; but I had seen enough of the culinary régime to render it impossible. I broke my fast on a handful of frozen liver-nuts that Bill brought me, and, bursting out into a profuse perspiration, I stripped like the rest, threw my well-tired carcase across Mrs. Eider-duck's extremities, put her left-hand baby under my armpit, pillowed my head on Myouk's somewhat warm stomach, and thus, an honoured guest and in the place of honour, fell asleep.

Next morning, the sun nearly at noonday height, I awoke : Mrs. Eider-duck had my breakfast very temptingly ready. It was forked on the end of a curved piece of bone,—a lump of boiled blubber and a choice cut of meat. The preliminary cookery I had not seen : I am an old traveller, and do not care to intrude into the mysteries of the kitchen. My appetite was in its usual blessed redundancy, and I was about to grasp the smiling proffer, when I saw the matron, who was manipulating as chief intendant

CHAPTER

XLIII.

A crowded interior.

An Esquimaux supper and bed.

A morning repast.

DED INTERIOR—THE
G FOR THE DEAD—

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CHAPTER
XLIH.
Esqui-
maux
cooking.

of the other kotluk, performing an operation that arrested me. She had in her hand a counterpart of the curved bone that supported my *déjeuner*,—indeed, it is the universal implement of an Esquimaux cuisine,—and, as I turned my head, I saw her quietly withdrawing it from beneath her dress, and then plunging it into the soup-pot before her, to bring out the counterpart of my own smoking morsel. I learned afterward that the utensil has its two recognised uses ; and that, when not immediately wanted for the purposes of pot or table, it ministers to the “royal luxury” of the Scottish king. I dare not amplify this description.

Dirt or filth in our sense is not a conceived quality with these Esquimaux. Incidentally it may be an annoyance or obstruction ; but their nearest word, “Eberk,” expresses no more than this.

It is an ethnological trait of these ultra-northern nomads,—so far as I know, a unique one,—and must be attributed not alone to their predatory diet and peculiar domestic system, but to the extreme cold, which by rapid freezing resists putrefaction, and prevents the joint accumulation of the dogs and the household from being intolerable. Their senses seem to take no cognizance of what all instinct and association make revolting to the sight, and touch, and smell of civilized man.

My note-book proves this by exact and disgusting details, the very mildest of which I cannot transfer to these pages.

Meeting
with
Awahtok.

I spent some time at Etah in examining the glacier and in making sketches of things about me. I met several old friends. Among the rest was Awahtok, only now recovering from his severe frost-bite, the effect of his fearful adventure with Myouk among the drifting ice. I gave him a piece of red flannel and powwowed him. He resides with Ootuniah in the second hut, a smaller one than Metek's, with his pretty wife, a sister of Kalutunah's. I could hardly believe the infanticide story which Hans had told me of this young couple ; and, pretending ignorance of the matter, I asked after the child's health. Their manner satisfied me that the story was true ; they turned their hands downward, but without any sign of confusion. They did not even pay its memory the cheap compliment of tears, which among these people are always at hand.

There is a singular custom which I have often noticed here as well as among some of the Asiatics, and which has its analogies

in more cultivated centres. I allude to the regulated formalities of mourning for the dead. They weep according to system; when one begins they are all expected to join, and it is the office of courtesy for the most distinguished of the company to wipe the eyes of the chief mourner. They often assemble by concert for a general weeping match; but it happens sometimes that one will break out into tears, and others courteously follow, without knowing at first what is the particular subject of grief.

It is not, however, the dead alone who are sorrowed for by such a ceremony. Any other calamity may call for it as well: the failure of a hunt, the snapping of a walrus-line, or the death of a dog. Mrs Eider-duck, *née* Small Belly (Egurk), once looked up at me from her kolupsut and burst into a gentle gush of woe. I was not informed of her immediate topic of thought, but with remarkable presence of mind I took out my handkerchief,—made by Morton out of the body of an unused shirt,—and, after wiping her eyes politely, wept a few tears myself. This little passage was soon over; Mrs. Eider-duck returned to her kolupsut, and Nalegak to his note-book.

The ceremonial mourning, however, is attended sometimes, if not always, by observances of a more serious character. So far as my information goes, the religious notions of the Esquimaux extend only to the recognition of supernatural agencies, and to certain usages by which they may be conciliated. The angekok of the tribe—the prophet, as he is called among our Indians of the West—is the general counsellor. He prescribes or powwows in sickness and over wounds, directs the policy and movements of the little state, and, though not the titular chief, is really the power behind the throne. It is among the prerogatives and duties of his office to declare the appropriate oblations and penances of grief. These are sometimes quite oppressive. The bereaved husband may be required even to abstain from the seal or walrus-hunt for the whole year, from *Okiakut* to *Okiakut*—winter to winter. More generally he is denied the luxury of some article of food, as the rabbit or a favourite part of the walrus; or he may be forbidden to throw back his nessak, and forced to go with uncovered head.

A sister of Kalutunah died suddenly at Peteravik. Her body was sewed up in skins, not in a sitting posture, like the remains

CHAPTER
XLIII.

A grand
weeping
match.

"A gentle
gush of
woe."

The ange-
kok of the
tribe.

Penances.

CHAPTER

XLIII.

Funeral
ceremonies.

which we found in the graves at the south, but with the limbs extended at full length; and her husband bore her unattended to her resting-place, and covered her, stone by stone, with a rude monumental cairn. The blubber-lamp was kept burning outside the hut while the solitary funeral was in progress; and when it was over the mourners came together to weep and howl, while the widower recited his sorrows and her praise. His penance was severe, and combined most of the inflictions which I have described above.

It is almost as difficult to trace back the customs of the Smith's Sound Esquimaux as it is to describe their religious faith. They are a declining—almost an obsolete—people, "*toto orbe divisos*," and too much engaged with the necessities of the present to cherish memorials of the past. It was otherwise with those whom we met in the more southern settlements. These are now for the most part concentrated about the Danish posts, in very different circumstances, physical as well as moral, from their brethren of the north.

CHAPTER XLIV.

THE ESQUIMAUX OF GREENLAND—CHANGE OF CHARACTER—LABOURS OF
THE MISSIONARIES—NÖLUK—THE OMINAKS—PINGEIAK AND JENS—THE
ANGEKOKS—ISSIUTOK—THE IMNAPOK—THE DECREE.

SOME thirty years ago the small-pox found its way among the natives of the upper coast, and most of those who escaped or survived its ravages sought the protection of the colony. Others followed from the more inland regions; and now there is not an Esquimaux, from the Great Glaciers of Melville Bay down to Upernavik, who does not claim fellowship in that community.

CHAPTER
XLIV.

Small-pox
among the
natives.

We found traces of their former haunts much further north than they appear to have been noticed by others; some of such a character as to indicate for them a tolerably recent date. I have already mentioned the deserted huts which we came upon in Shoal-Water Cove, in lat. $78^{\circ} 27'$, and the stone fox-traps upon the rocks near them. Other huts, evidently of Esquimaux construction, but very ancient, were found on the in-shore side of Littleton Island; and among the cairns around them that had served to conceal provisions or that now covered the remains of the dead, were numerous implements of the chase.

Traces of
deserted
huts.

The huts which I saw near Refuge Harbour, in lat. $78^{\circ} 33'$, were much more perfect, and had been inhabited very recently. From some of the marks which I have referred to in my journal, there was reason to suppose that the inmates might return before the opening of another season.

It was still otherwise with those that we met at Karsuk and elsewhere further to the south. These, though retaining signs of comparatively modern habitation, were plainly deserted homes. I met at Upernavik an ancient woman, the latest survivor of the few who escaped from these settlements during the general pestilence.

The only
survivor of
a tribe.

The labours of the Lutheran and Moravian missionaries have been so far successful among these people that but few of them are now without the pale of professed Christianity, and its re-

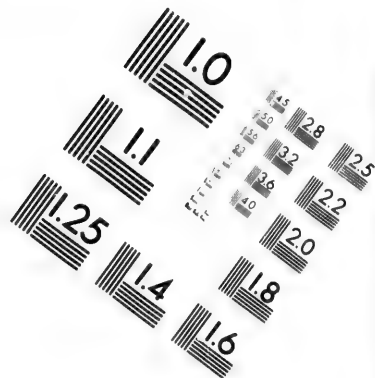
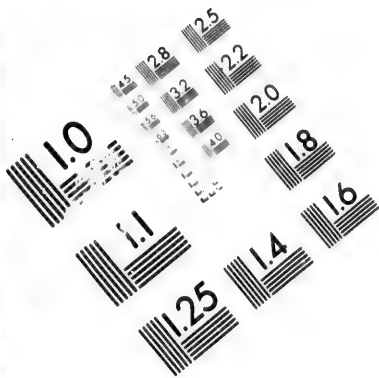
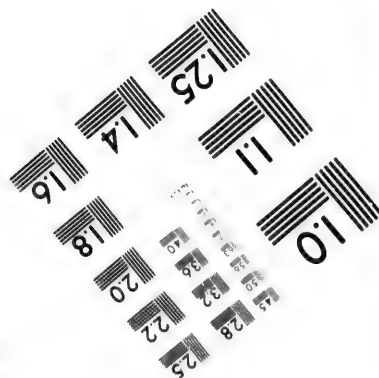
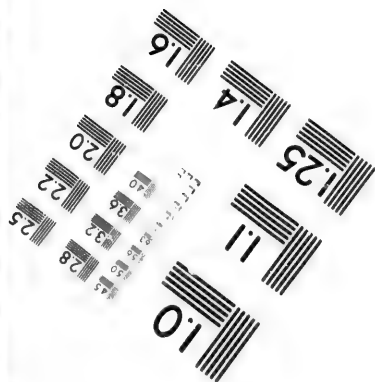
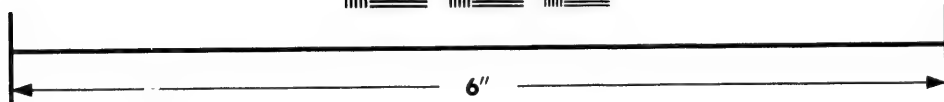
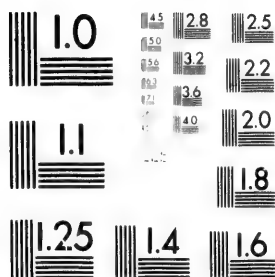


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CHAPTER XLIV.
Original state of the natives. forming influences have affected the moral tone of all. Before the arrival of these self-sacrificing evangelists, murder, incest, burial of the living, and infanticide, were not numbered among crimes. It was unsafe for vessels to touch upon the coast; treachery was as common and as much honoured as among the Polynesians of the Eastern seas. Crantz tells us of a Dutch brig that was seized by the natives at the port of Disco, in 1740, and the whole crew murdered; and two years later the same fate befell the seamen of another vessel that had accidentally stranded.

Change of character. But for the last hundred years Greenland has been safer for the wrecked mariner than many parts of our own coast. Hospitality is the universal characteristic, enjoined upon the converted as a Christian duty, but everywhere a virtue of savage life. From Upernavik to Cape Farewell, the Esquimaux does not hesitate to devote his own meal to the necessities of a guest.

Benefits of the missionary school. The benefits of the missionary school are not confined to the Christianized natives; and it is observable that the virtues of truth, self-reliance, and generous bearing, have been inculcated successfully with men who still cherish the wild traditional superstitions of their fathers. Some of these are persons of strongly-marked character, and are trusted largely by the Danish officials. One of them, the nalegak-soak, or great chief, Nöluk, claims to have been the king or "head-man" of his people.

Traditions and games of the Greenlanders. But among the native Greenlanders, as among other nomads, there seems to be no recognition of mastership except such as may be claimed by superiority of prowess. They have definite traditions of the organized games and exercises by which this superiority used to be authenticated. Indeed, the custom obtained until within the two last generations, and is traceable still in many of the periodical sports. Wrestling, jumping, tracking by the fingers or with hooked arms, pushing heel + heel in a sitting posture, dealing and receiving alternate blows on the left shoulder, shooting further and with the stronger bow, carrying the heavier stone the greater distance, were among their trials of strength. I have seen some of these stones at Fortuna Bay and Disco Fiord, which remain as they were left at the end of the contest, memorials of the athlete who sustained their weight.

Nöluk is a remarkably powerful man, and as straight and graceful as an Iroquois. He is now a grandfather by his second

wife; but he is still the best hunter of the settlement, and dis- CHAPTER XLIV. Nöluk.
dains to comply with the usage which would transfer his dog-teams and apparatus of the hunt to his grown-up son. During the pestilence of 1820 he resided fifty-six miles north of Upernavik, at Tessiusak, in lat. 73° 36': I have seen the ruins of his hut there. When all the families fled from the sick, Nöluk still drove his sledge homeward and deposited food regularly for his dying wife. On his last visit he saw her through the window a corpse, and his infant son sucking at her frozen breast. Parental instinct was mastered by panic: he made his way to the south without crossing the threshold.

Among the regal perquisites of the nalegak-soak was the questionable privilege of having as many wives as he could support. Besides this, he had little except an imperfectly-defined claim to certain proceeds of the hunt. In old times, the subordinate nalegaks, chieftains of minor settlements, held their office by a similar title of personal might among their immediate fellows—thus constituting something like a system of feudal sovereignties without hereditary descent.

It is related, however, much as it is in histories with which we are more familiar, that the supremacy of the "Great Master" sometimes encountered rebuke from his barons. The Upernavik reindeer-hunters used to ascend the Salmon River, near Svartehuk, to a point from which by a single day's journey they could reach Okossisak, a hunting-station of the Ominaks. It so happened upon one occasion, when the Ominaks had been more than ordinarily successful in the chase, that a band of Upernaviks, with whom fortune had been less propitious, determined to pay them a predatory visit, attended by their great chief, the liege lord of both tribes. They found the Ominaks with their chief in company, a short chunky fellow, who proffered the accustomed hospitalities of his tent in true knightly style. But, in reply to the salutation, "Be seated and eat," the Great Upernavik, whose companions were watching for their cue, gave a scowl, the reverse of the uniform formula of acceptance, which is simply to sit down and be filled. Hereupon old Ominak strung silently a heavy bow, and, drawing his arrow to the head, buried it in the narrow cleft of a distant rock, soliloquizing, as it struck, "He who is better than I am is my master." I give his words in the original for an

Privileges
of the
nalegak-
soak.

The
"Grand
Master"
and his
barons.

The Omi-
naks and
Uperna-
vika.

CHAPTER
XLIV.An exercise in
phonetics.

exercise in phonetics: "Kinajougenerua," who is better, "Ovanöt," than I am; the rest of the sentence—"is my master"—being understood: an elliptical form of expression very common among these people, and often aided by accompanying gestures. Thus euphionously solicited, the Upernaviks sat down and ate, and, pronouncing the brief acknowledgment, "Thanks," which always ends a stranger's meal, went their way in peace.

Jens and
Pingeiak.

The old practice which is found among some of the Asiatic and North American tribes, of carrying off the bride by force, is common among the Esquimaux, and reluctantly abandoned even by the converted. The ceremonial rite follows at the convenience of the parties. Jens, the son of my old friend Christiansen at Präven, came very nigh being left a bachelor by an exercise of this custom. He was not quite ready to perform the gallant function himself toward his lady-love, when a lusty rival, one Pingeiak, carried her off bodily in dead of night. The damsel made good fight, however, and, though the abduction was repeated three times over, she managed to keep her troth. In the result, Jens, as phlegmatic and stupid a half-breed as I ever met with, got the prettiest woman in all North Greenland. Pingeiak was the best hunter and had the largest tent, but Jens was the son of the head man. I believe such things may come about in other parts of the world.

An elope-
ment.

I remember other instances among parties whom I knew. A young aspirant for the favours of an unbaptized daughter of the settlement at Sever-nik got a companion to assist him, and succeeded in carrying her to his sledge. But the ruthless father had the quicker dog-team, and pursued with such ferocious alacrity, that the unlucky devotee of ancient custom had to clamber up a rocky gorge to escape his wrath, leaving the chosen one behind him. The report—for scandal is not frozen out of Greenland—makes the lady a willing eloper, and more courageous than her runaway lover.

The last
angekok.

The mysteries of the angekok, still so marked in their influence further to the north, are not openly recognised near the Danish settlements. The last regular professor of them, Kenguit, was baptized at Präven in 1844, changing his name to Jonathan Jeremias. But as you recede from the missionary influence the dark art is still practised in all its power.

A fact of psychological interest, as it shows that civilized or savage wonder-workers form a single family, is that the angekoks believe firmly in their own powers. I have known several of them personally, after my skill in powwow had given me a sort of correlative rank among them, and can speak with confidence on this point. I could not detect them in any resort to jugglery or natural magic: their deceptions are simply vocal, a change of voice, and perhaps a limited profession of ventriloquism, made more imposing by the darkness. They have, however, like the members of the learned professions everywhere else, a certain language or jargon of their own, in which they communicate with each other. Lieutenant-Governor Steffenson, who had charge of the Northern District up to 1829, and was an admirable student of everything that regards these people, says that their artificial language is nothing but the ordinary dialect of the country, modified in the pronunciation, with some change in the import of the words and the introduction of a few cabalistic terms.

Besides the angekoks, who are looked up to as the hierophants or dispensers of good, they have the *issiutok*, or evil men, who work injurious spells, enchantments, metamorphoses. Like the witches of both Englands, the Old and the New, these malignants are rarely submitted to trial till they have been subjected to punishment—"castigat auditque." The finder of the Runic stone, old Pelemut, was one of them, and dealt with accordingly. Two others, only as far back as 1828, suffered the penalty of their crime on the same day, one at Karmenak, the other at Upernavik. This last was laudably killed after the "old customs,"—custom being the apology of the rude everywhere for things revolting to modern sense. He was first harpooned, then eviscerated, a flap let down from his forehead "to cover his eyes and prevent his seeing again,"—he had the "evil eye," it might seem; and then small portions of his heart were eaten, so as to make it secure that he could not come back to earth unchanged. All this in accordance with venerated ritual.

The other, the Karmenak case, was that of an old sick man. He was dealt with more succinctly by his neighbour Kamokah, now old Tobias; who, at the instance of the issiutok family, pushed him into the sea after harpooning him, and then gave his flesh to the dogs. I have seen Tobias at Präven, a Christian-

CHAPTER
XLIV.
The angekoks.

The issiutok, or evil men.

Their punishment.

CHAPTER
XLIV.Punish-
ments.

ized man now, of very good repute, and, for aught I know, worthy of it.

The capital punishment with them, as with us, seems in general to be reserved for offences of the higher grade. For those of minor dignity, such as form the staple of our civilized forums, and even those which might find their way profitably into a court of honour, the *Imnapok* is the time-honoured tribunal of redress. The original meaning of this word, I believe, is a native dance or singsong; but the institution which now bears the name is of much more dignity, and is found, with only circumstantial differences, among many other tribes within and beyond the Arctic circle.

The Imna-
pok or tri-
bunal of
redress.

An Esquimaux has inflicted an injury on one of his countrymen: he has cut his seal-lines, or harmed his dogs, or burned his bladder-float, or perpetrated some enormity equally grievous. A summons comes to him from the *angekok* to meet the "country-side" at an *Imnapok*. The friends of the parties and the idlers of many miles around gather about the justice-seat, it may be at some little cluster of huts, or, if the weather permits, in the open air. The accuser rises and preludes a few discords with a seal-rib on a tom-tom or drum. He then passes to the charge, and pours out in long paragraphic words all the abuse and ridicule to which his outrageous vernacular can give expression. The accused meanwhile is silent; but, as the orator pauses after a signal hit, or to flourish a cadence on his musical instrument, the whole audience, friends, neutrals, and opponents, signalize their approval by outcries as harmonious as those which we sometimes hear in our town-meetings at home. Stimulated by the applause, and warming with his own fires, the accuser renews the attack, his eloquence becoming more and more licentious and vituperative, until it has exhausted either his strength or his vocabulary of invective. Now comes the accused, with defence and counter-charge and retorted abuse; the assembly still listening and applauding through a lengthened session. The Homeric debate at a close, the *angekoks* hold a powwow, and a penalty is denounced against the accused for his guilt, or the accuser for his unsustained prosecution.

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CHAPTER XLV.

WALRUS-HUNTING—ESQUIMAUX HABITS—RETURN FROM ETAH—PREPARING
FOR ESCAPE—MAKING SLEDGES—DR. HAYES.

THE six storm-arrested strangers were off early in the morning: I sent messages of compliment by them to Kalutunah, inviting him to visit the brig; and in the afternoon Myouk and myself followed them to the floes for a walrus-hunt.

CHAPTER
XLV.
Departure
of the
strangers.

The walrus supplies the staple food of the Rensselaer Bay Esquimaux throughout the greater part of the year. To the south as far as Murchison Channel, the seal, unicorn, and white whale alternate at their appropriate seasons; but in Smith's Sound these last are accidental rather than sustained hunts.

The manner of hunting the walrus depends in a considerable degree on the season of the year. In the fall, when the pack is but partially closed, they are found in numbers hanging around the neutral region of mixed ice and water, and, as this becomes solid with the advance of winter, following it more and more to the south.

Manner of
hunting
the walrus.

The Esquimaux approach them then over the young ice, and assail them in cracks and holes with nalegit and line. This fishery, as the season grows colder, darker, and more tempestuous, is fearfully hazardous; scarcely a year passes without a catastrophe. It was the theme of happy augury last winter, that no lives had been lost for some months before, and the angekoks even ventured to prophesy from it that the hunt would be auspicious,—a prophecy, like some others, hazarded after the event, for the ice had continued open for the walrus till late in December.

With the earliest spring, or, more strictly, about a month after the re-appearance of the sun, the winter famine is generally relieved. January and February are often, in fact, nearly always, months of privation; but during the latter part of March the spring fishery commences. Everything is then life and excitement.

The spring
fishery.

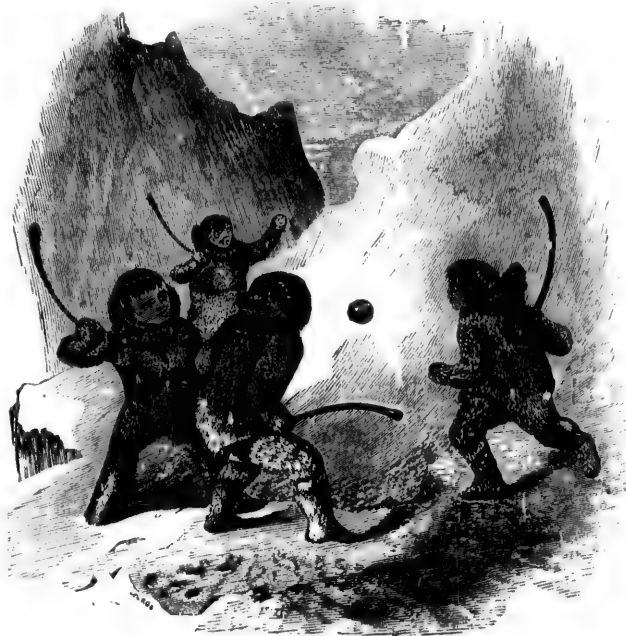
The walrus is now taken in two ways. Sometimes he has risen

CHAPTER
XLV.

The best
time for
hunting
walrus.

by the side of an iceberg, where the currents have worn away the floe, or through a tide-crack, and, enjoying the sunshine too long, finds his retreat cut off by the freezing up of the opening; for, like the seal at its attuk, the walrus can only work from below. When thus caught, the Esquimaux, who with keen hunter-craft are scouring the floes, scent him out by their dogs and spear him.

The early spring is the breeding season, and the walrus then are in their glory. My observations show that they tenant the region throughout the entire year; but at this time the female, with her calf, is accompanied by the grim-visaged father, surging



CHILDREN PLAYING BALL.

in loving trios from crack to crack, sporting around the berg-water, or basking in the sun. While thus on their tours, they invite their vigilant enemies to the second method of capture. This is also by the lance and harpoon; but it often becomes a

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regular battle, the male gallantly fronting the assault and charging the hunters with furious bravery. Not unfrequently the entire family—mother, calf, and bull—are killed in one of these contests.

The huts—those poor, miserable, snow-covered dens—are now scenes of life and activity. Stacks of jointed meat are piled upon the ice-foot; the women are stretching the hide for sole-leather, and the men cutting out a reserve of harpoon-lines for the winter. Tusky walrus heads stare at you from the snow-bank, where they are stowed for their ivory; the dogs are tethered to the ice; and the children, each one armed with the curved rib of some big amphibion, are playing ball and bat among the drifts.

On the day of my arrival, four walrus were killed at Etah, and no doubt many more by Kalutak at Peteravik. The quantity of beef which is thus gained during a season of plenty, one might suppose, should put them beyond winter want; but there are other causes besides improvidence which make their supplies scanty. The poor creatures are not idle; they hunt indomitably, without the loss of a day. When the storms prevent the use of the sledge, they still work in stowing away the carcasses of previous hunts. An excavation is made either on the mainland, or, what is preferred, upon an island inaccessible to foxes, and the jointed meat is stacked inside and covered with heavy stones. One such cache, which I met on a small island a short distance from Etah, contained the flesh of ten walrus, and I know of several others equally large.

The excessive consumption is the true explanation of the scarcity. By their ancient laws all share with all; and, as they migrate in numbers as their necessities prompt, the tax on each particular settlement is excessive. The quantity which the members of a family consume, exorbitant as it seems to a stranger, is rather a necessity of their peculiar life and organization than the result of inconsiderate gluttony. In active exercise and constant exposure to cold the waste of carbon must be enormous.

When in-doors and at rest, tinkering over their ivory harness-rings, fowl-nets, or other household gear, they eat as we often do in more civilized lands—for animal enjoyment and to pass away time. But when on the hunt they take but one meal a day, and that after the day's labour is over; they go out upon the ice

CHAPTER
XLV.

Work after
the hunt.

Industry
of the Es-
quimaux.

Causes of
scarcity.

CHAPTER

XLV.

Esqui-
maux
ration.

without breakfast, and, except the "cold cuts," which I confess are numerous, eat nothing until their return. I would average the Esquimaux ration in a season of plenty—it is of course a mere estimate, but I believe a perfectly fair one—at eight or ten pounds a day, with soup and water to the extent of half a gallon.

At the moment of my visit, when returning plenty had just broken in upon their famine, it was not wonderful that they were hunting with avidity. The settlements of the South seek at this season the hunting-ground above, and, until the seals begin to form their basking-holes, some ten days later, the walrus is the single spoil.

Haunts of
the walrus.

I incline to the opinion that these animals frequent the half-broken ice-margin throughout the year; for, after the season has become comparatively open, they are still found in groups, with their young, disporting in the leads and shore-water. They are, of course, secure under such circumstances from the Esquimaux hunters of the Far North, who, not having the kayak of the more southern settlements, can only approach them on the ice.

In the late summer or "ausak," after all ice has melted, the walrus are in the habit of resorting to the rocks. They are then extremely alert and watchful; but the Esquimaux note their haunts carefully, and, concealing themselves in the clefts, await their approach with patient silence, and secure them by the harpoon and line.

Departure
from Etah.

My departure from Etah Bay was hastened by news from the brig. Hans brought me a letter from Dr. Hayes, while I was out walrus-hunting near Life-Boat Cove, which apprised me of the dangerous illness of Mr. M'Gary. I had a load of meat on my sledge, and was therefore unable to make good speed with my four tired dogs; but I rode and ran by turns, and reached the brig, after fifty miles' travel, in seven hours from the time of meeting Hans. I was thoroughly broken down by the effort, but had the satisfaction of finding that my excellent second officer had passed the crisis of his attack.

I left Hans behind me with orders to go to Peteravik and persuade Kalutunah to come to the brig, sending him a capstan-bar as a pledge of future largess,—invaluable for its adaptation to harpoon-shafts.

"April 19, *Thursday*.—The open water has not advanced from

the south more than four miles within the past three weeks. It is still barely within Cape Alexander. It is a subject of serious anxiety to me. Our experience has taught us that the swell caused by these winds breaks up the ice rapidly. Now, there can be no swell to the southward, or these heavy gales would have done this now. It augurs ill not only for the possible release of the brig, but for the facility of our boat-voyage if we shall be obliged to forsake her, as everything seems to say we must do soon. Last year, on the 10th of May, the water was free around Littleton Island, and coming up to within two miles of Refuge Inlet. It is now forty miles further off!

"Petersen and Ohlsen are working by short spells at the boats and sledges.

"I will not leave the brig until it is absolutely certain that she cannot thaw out this season; but everything shall be matured for our instant departure as soon as her fate is decided. Every detail is arranged; and, if the sick go on as they have done, I do not doubt but that we may carry our boats some thirty or forty miles over the ice before finally deciding whether we must desert the brig.

"*April 20, Friday.*—A relief-watch, of Riley, Morton, and Bonsall, are preparing to saw out sledge runners from our cross-beams. It is slow work. They are very weak, and the thermometer sinks at night to -26° . Nearly all our beams have been used up for fuel; but I have saved enough to construct two long sledges of 17 feet 6 inches each. I want a sledge sufficiently long to bring the weight of the whaleboat and her stowage within the line of the runner; this will prevent her rocking and pitching when crossing hummocked ice, and enable us to cradle her firmly to the sledge.

"They are at this moment breaking out our cabin bulkhead to extract the beam. Our cabin dormitory is full of cold vapour. Everything is comfortless: blankets make a sorry substitute for the moss-padded wall which protected us from -60° .

"*April 21, Saturday.*—Morton's heel is nearly closed, and there is apparently a sound bone underneath. He has been upon his back since October. I can now set this faithful and valuable man to active duty very soon.

"The beam was too long to be carried through our hatches;

CHAPTER
XLV.

Serious
anxiety
about the
slow ad-
vance of
the open
water.

Making
sledges.

Morton's
recovery.

CHAPTER

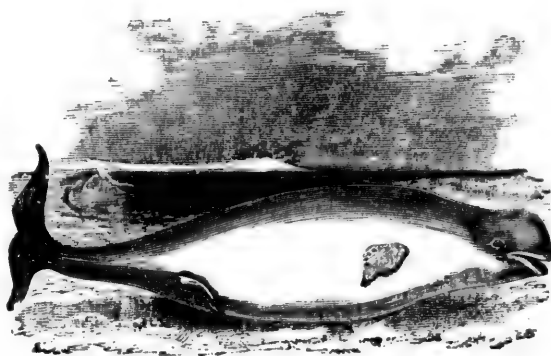
XLV.

Sledge
making.

we therefore have sawed it as it stands, and will carry up the slabs separately. These slabs are but one and a half inch wide, and must be strengthened by iron bolts and cross-pieces; still they are all that we have. I made the bolts out of our cabin curtain-rods, long disused. Mr. Petersen aids Ohlsen in grinding his tools. They will complete the job to-morrow,—for we must work on Sunday now,—and by Monday be able to begin at other things. Petersen undertakes to manufacture our cooking and mess-gear. I have a sad-looking assortment of battered rusty tins to offer him; but with stove-pipe much may be done.

April 22, Sunday.—Gave rest for all but the sawyers, who keep manfully at the beam. Some notion of our weakness may be formed from the fact of these five poor fellows averaging among them but one foot per hour.

Dr. Hayes. "I read our usual prayers; and Dr. Hayes, who feels sadly the loss of his foot, came aft and crawled upon deck to sniff the daylight. He had not seen the sun for five months and three weeks."



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CHAPTER XLVI.

KALUTUNAH—THE HUNTING PARTY—SETTING OUT—MY TALLOW-BALL—
A WILD CHASE—HUNTING STILL—THE GREAT GLACIER—THE ESCA-
LADED STRUCTURE—FORMATION OF BERGS—THE VISCOUS FLOW—
CREVICES—THE FROZEN WATER-TUNNEL—CAPE FORBES—FACE OF
GLACIER.

WE continued toiling on with our complicated preparations till the evening of the 24th, when Hans came back well laden with walrus meat. Three of the Esquimaux accompanied him, each with his sledge and dog-team fully equipped for a hunt. The leader of the party, Kalutunah, was a noble savage, greatly superior in everything to the others of his race. He greeted me with respectful courtesy, yet as one who might rightfully expect an equal measure of it in return, and, after a short interchange of salutations, seated himself in the post of honour at my side.

I waited, of course, till the company had fed and slept, for among savages especially haste is indecorous, and then, after distributing a few presents, opened to them my project of a northern exploration. Kalutunah received his knife and needles with a "Kuyanaka," "I thank you:" the first thanks I have heard from a native of this upper region. He called me his friend,—"*Asakaoteet*," "I love you well,"—and would be happy, he said, to join the "*nalegak-soak*" in a hunt.

The project was one that had engaged my thoughts long before daylight had renewed the possibility of carrying it out. I felt that the further shores beyond Kennedy Channel were still to be searched before our work could be considered finished; but we were without dogs, the indispensable means of travel. We had only four left out of sixty-two. Famine among the Esquimaux had been as disastrous as disease with us: they had killed all but thirty, and of these there were now sixteen picketted on the ice about the brig. The aid and influence of Kalutunah could secure my closing expedition.

I succeeded in making my arrangements with him, provisionally

CHAPTER
XLVI.

Return of
Hans with
a party of
Esquimaux.

Kalutu-
nah.

Project of
a northern
explora-
tion.

CHAPTER
XLVI.Departure
of the
exploring
expedi-
tion.

at least, and the morning after we all set out. The party consisted of Kalutunah, Shanghu, and Tatterat, with their three sledges. Hans, armed with the Marston rifle, was my only com-



KALUTUNAH PARTY.

Equip-
ment.

panion from the ship's company. The natives carried no arms but the long knife and their unicorn-ivory lances. Our whole equipment was by no means cumbersome: except the clothes upon our back and raw walrus-meat, we carried nothing. The walrus, both flesh and blubber, was cut into flat slabs half an inch thick, and about as long and wide as a folio volume. These, when frozen, were laid directly upon the cross-bars of the sledge, and served as a sort of floor. The rifle and the noonghak were placed on top, and the whole was covered by a well-rubbed bear-skin, strapped down by a pliant cord of walrus-hide.

Thus stowed, the sledge is wonderfully adapted to its wild travel. It may roll over and over, for it defies an upset; and its runners of the bones of the whale seem to bear with impunity the fierce shocks of the ice. The meat, as hard as a plank, is the driver's seat: it is secure from the dogs; and when it is wanted for a cold cut, which is not seldom, the sledge is turned upside-down, and the layers of flesh are hacked away from between the cross-bars.

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horiz

We started with a wild yell of dogs and men in chorus, Kalutunah and myself leading. In about two hours we had reached a high berg about fifteen miles north of the brig. Here I reconnoitred the ice ahead. It was not cheering; the outside tide-channel, where I had broken through the fall before, was now full of squeezed ice, and the plain beyond the bergs seemed much distorted. The Esquimaux, nevertheless, acceded to my wish to attempt the passage, and we were soon among the hummocks. We ran beside our sledges, clinging to the upstanders, but making perhaps four miles an hour where, unassisted by the dogs, we could certainly have made but one. Things began to look more auspicious.

We halted about thirty miles north of the brig, after edging along the coast about thirty miles to the eastward. Here Shanghu burrowed into a snow-bank and slept, the thermometer standing at -30° . The rest of us turned in to lunch; the sledge was turned over, and we were cutting away at the raw meat, each man for himself, when I heard an exclamation from Tatterat, an outlandish Esquimaux, who had his name from the Kittywake gull. He had found a tallow-ball, which had been hid away without my knowledge by my comrades for my private use. Instantly his knife entered the prized recesses of my ball, and, as the lumps of liver and cooked muscle came tossing out in delicate succession, Kalutunah yielded to the temptation, and both of them picked the savoury bits as we would the truffles of a "Perigord pâté." Of necessity I joined the group, and took my share; but Hans, poor fellow, too indignant at the liberty taken with my provender, refused to share in the work of demolishing it. My ten-pound ball vanished nevertheless in scarcely as many minutes.

A feast on
the tallow-
ball.

The journey began again as the feast closed, and we should have accomplished my wishes had it not been for the untoward influence of sundry bears. The tracks of these animals were becoming more and more numerous as we rounded one iceberg after another; and we could see the beds they had worn in the snow while watching for seal. These swayed the dogs from their course: yet we kept edging onward; and when in sight of the northern coast, about thirty miles from the central peak of the "Three Brothers," I saw a deep band of stratus lying over the horizon in the direction of Kennedy Channel. This water-sky

Tracks of
bears.

CHAPTER
XLVI.Hunting
the bear.

indicated the continued opening of the channel, and made me more deeply anxious to proceed. But at this moment our dogs encountered a large male bear in the act of devouring a seal. The impulse was irresistible: I lost all control over both dogs and drivers. They seemed dead to everything but the passion of pursuit. Off they sped with incredible swiftness, the Esquimaux clinging to their sledges, and cheering their dogs with loud cries of "Nannook!" A mad, wild chase, wilder than German legend, —the dogs, wolves; the drivers, devils. After a furious run, the animal was brought to bay; the lance and the rifle did their work, and we halted for a general feed. The dogs gorged themselves, the drivers did as much, and we buried the remainder of the carcass in the snow. A second bear had been tracked by the party to a large iceberg north of Cape Russell; for we had now travelled to the neighbourhood of the Great Glacier. But the dogs were too much distended by their abundant diet to move: their drivers were scarcely better. Rest was indispensable.

A sleep on
the ice.

We took a four hours' sleep on the open ice, the most uncomfortable that I remember. Our fatigue had made us dispense with the snow-house; and, though I was heavily clad in a full suit of furs, and squeezed myself in between Kalutunah and Shanghu, I could not bear the intense temperature. I rose in the morning stiff and sore. I mention it as a trait of nobleness on the part of Kalutunah, which I appreciated very sensibly at the time, that, seeing me suffer, he took his kapetah from his back and placed it around my feet.

Disputes
about the
route.

The next day I tried again to make my friends steer to the northward. But the bears were most numerous upon the Greenland side; and they determined to push on toward the glacier. They were sure, they said, of finding the game among the broken icebergs at the base of it. All my remonstrances and urgent entreaties were unavailing to make them resume their promised route. They said that to cross so high up as we then were was impossible, and I felt the truth of this when I remembered the fate of poor Baker and Schubert at this very passage. Kalutunah added, significantly, that the bear-meat was absolutely necessary for the support of their families, and that Nalegak had no right to prevent him from providing for his household. It was a strong argument, and withal the argument of the strong.

I found now that my projected survey of the northern coast must be abandoned, at least for the time. My next wish was to get back to the brig, and to negotiate with Metek for a purchase or loan of his dogs as my last chance. But even this was not readily gratified. All of Saturday was spent in bear-hunting. The natives, as indomitable as their dogs, made the entire circuit of Dallas Bay, and finally halted again under one of the islands which group themselves between the headlands of Advance Bay and at the base of the glacier.

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XLVI.

The survey abandoned.

Anxious as I was to press our return to the brig, I was well paid for my disappointment. I had not realized fully the spectacle of this stupendous monument of frost. I had seen it for some hours hanging over the ice like a white-mist cloud, but now it rose up before me clearly defined and almost precipitous. The whole horizon, so vague and shadowy before, was broken by long lines of icebergs; and as the dogs, cheered by the cries of their wild drivers, went on, losing themselves deeper and deeper in the labyrinth, it seemed like closing around us the walls of an icy world. They stopped at last; and I had time, while my companions rested and fed, to climb one of the highest bergs. The atmosphere favoured me: the blue tops of Washington Land were in full view; and, losing itself in a dark water-cloud, the noble headland of John Barrow.

The great glacier.

The trend of this glacier is a few degrees to the west of north. We followed its face afterward, edging in for the Greenland coast, about the rocky archipelago which I have named after the *Advance*. From one of those rugged islets, the nearest to the glacier which could be approached with anything like safety, I could see another island larger and closer in shore, already half covered by the encroaching face of the glacier, and great masses of ice still detaching themselves and splintering as they fell upon that portion which protruded. Repose was not the characteristic of this seemingly solid mass; every feature indicated activity, energy, movement.

The trend of the glacier.

The surface seemed to follow that of the basis-country over which it flowed. It was undulating about the horizon, but as it descended toward the sea it represented a broken plain with a general inclination of some nine degrees, still diminishing toward the foreground. Crevices, in the distance mere wrinkles, ex-

Appearance of the surface.

CHAPTER XLVI. panded as they came nearer, and were crossed almost at right angles by long continuous lines of fracture parallel with the face of the glacier.

A gigantic
stairway.

These lines too, scarcely traceable in the far distance, widened as they approached the sea until they formed a gigantic stairway. It seemed as though the ice had lost its support below, and that the mass was let down from above in a series of steps. Such an action, owing to the heat derived from the soil, the excessive surface-drainage, and the constant abrasion of the sea, must in reality take place. My note-book may enable me at some future day to develop its details. I have referred to this as the escalated structure of the Arctic glacier.

Indication
of a great
propelling
agency

The indication of a great propelling agency seemed to be just commencing at the time I was observing it. These split-off lines of ice were evidently in motion, pressed on by those behind, but still widening their fissures, as if the impelling action was more and more energetic nearer the water, till at last they floated away in the form of icebergs. Long files of these detached masses could be traced slowly sailing off into the distance, their separation marked by dark parallel shadows—broad and spacious avenues near the eye, but narrowed in the perspective to mere lines. A more impressive illustration of the forces of nature can hardly be conceived.

Formation
of ice-
bergs.

Regarded upon a large scale, I am satisfied that the iceberg is not disengaged by *debâcle*, as I once supposed. So far from falling into the sea, broken by its weight from the parent-glacier, it rises from the sea. The process is at once gradual and comparatively quiet. The idea of icebergs being discharged, so universal among systematic writers, and so recently admitted by myself, seems to me now at variance with the regulated and progressive actions of nature. Developed by such a process, the thousands of bergs which throng these seas should keep the air and water in perpetual commotion, one fearful succession of explosive detonations and propagated waves. But it is only the lesser masses falling into deep waters which could justify the popular opinion. The enormous masses of the Great Glacier are propelled, step by step and year by year, until, reaching water capable of supporting them, they are floated off to be lost in the temperatures of other regions.

The frozen masses before me were similar in structure to the

Alpine and Norwegian ice-growths. It would be foreign to the character of this book to enter upon the discussion which the remark suggests. I may add, however, that their face presented nearly all the characteristic features of the Swiss Alps. The *overflow*, as I have called the viscous overlapping of the surface, was more clearly marked than upon any Alpine glacier with which I am acquainted. When close to the island-rocks and looking out upon the upper table of the glacier, I was struck with the homely analogy of the batter-cake spreading itself out under the ladle of the housewife, the upper surface less affected by friction, and rolling forward in consequence.

CHAPTER
XLVI.The over-
flow.

The crevices bore the marks of direct fracture and their more gradual action of surface-drainage. The extensive water-shed between their converging planes gave to the icy surface most of the hydrographic features of a river-system. The ice-born rivers which divided them were margined occasionally with spires of discoloured ice, and generally lost themselves in the central areas of the glacier before reaching its foreground. Occasionally, too, the face of the glacier was cut by vertical lines, which, as in the Alpine growths, were evidently outlets for the surface-drainage. Everything was, of course, bound in solid ice when I looked at it; but the evidences of torrent-action were unequivocal, and Mr. Bonsall and Mr. Morton, at their visits of the preceding year, found both cascades and water-tunnels in abundance.

The cre-
vices.

The height of this ice-wall at the nearest point was about three hundred feet, measured from the water's edge; and the unbroken right line of its diminishing perspective showed that this might be regarded as its constant measurement. It seemed, in fact, a great icy table-land, abutting with a clean precipice against the sea. This is, indeed, characteristic of all those Arctic glaciers which issue from central reservoirs or *mers de glace* upon the fiords or bays, and is strikingly in contrast with the dependent or hanging glacier of the ravines, where every line and furrow and chasm seems to indicate the movement of descent and the mechanical disturbances which have retarded it.

The ice-
wall.

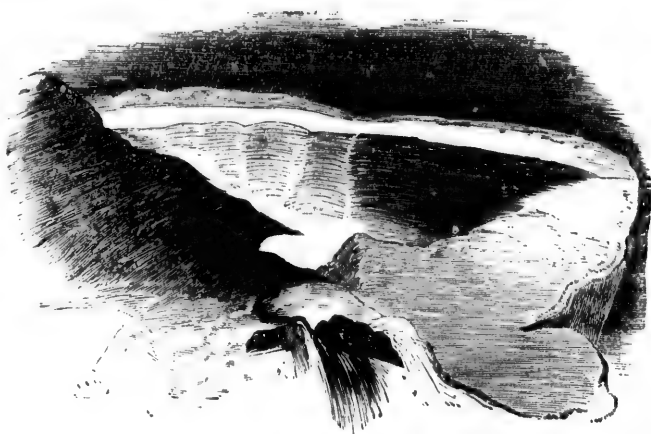
I have named this great glacier after Alexander Von Humboldt, and the cape which flanks it on the Greenland coast after Professor Agassiz.

Names
given to
the glacier
and the
cape.

The point at which this immense body of ice enters the Land

CHAPTER
XLVI.Naming
of Cape
Forbes.

of Washington gives even to a distant view impressive indications of its plastic or semi-solid character. No one could resist the impression of fluidity conveyed by its peculiar markings. I have named it Cape Forbes, after the eminent crystallogist whose views it so abundantly confirms.



CAPE FORBES.

The face
of the
glacier.

As the surface of the glacier receded to the south, its face seemed broken with piles of earth and rock-stained rubbish, till far back in the interior it was hidden from me by the slope of a hill. Still beyond this, however, the white blink or glare of the sky above showed its continued extension.

It was more difficult to trace its outline to the northward, on account of the immense discharges at its base. The talus of its descent from the interior, looking far off to the east, ranged from 7° to 15° , so broken by the crevices, however, as to give the effect of an inclined plane only in the distance. A few black knobs rose from the white snow, like islands from the sea.

Configu-
ration of its
surface.

The general configuration of its surface showed how it adapted itself to the inequalities of the basis-country beneath. There was every modification of hill and valley, just as upon land. Thus diversified in its aspect, it stretches to the north till it bounds upon the new land of Washington, cementing into one the Greenland of the Scandinavian Vikings and the America of Columbus.

CHAPTER XLVII.

CAPE JAMES KENT—MARSHALL BAY—ICE-RAFTS—STRIATED BOULDERS—
ANTIQUITIES—THE BEAR-CHASE—THE BEAR AT BAY—THE SINGLE
HUNT—TEETH-WOUNDS—THE LAST EFFORT—CLOSE OF THE SEARCH.

WHILE the Esquimaux were hunting about the bergs, I sat with my sketch-book, absorbed in the spectacle before me ; but, seeing them come to a halt above the island, I gained the nearest sledge, and the whole party gathered together a few miles from the face of the glacier. Here Hans and myself crawled with Tatterat and his dogs into an impromptu snow-hut, and, cheered by our aggregated warmth, slept comfortably. Our little dome, or rather burrow, for it was scooped out of a drift, fell down in the night ; but we were so worn out that it did not wake us.

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XLVII.

An im-
promptu
snow-hut.

On rising from a sleep in the open air, at a temperature of 12° below zero, the hunt was resumed along the face of the glacier, with just enough of success to wear out the dogs and endanger my chances of return to the brig. In spite of the grandeur of the scenery and the noble displays of force exhibited by the falling bergs, my thoughts wandered back to the party I had left ; and I was really glad when Kalutunah yielded to my renewed persuasion, and turned his team toward the ice-belt of the south-eastern shore.

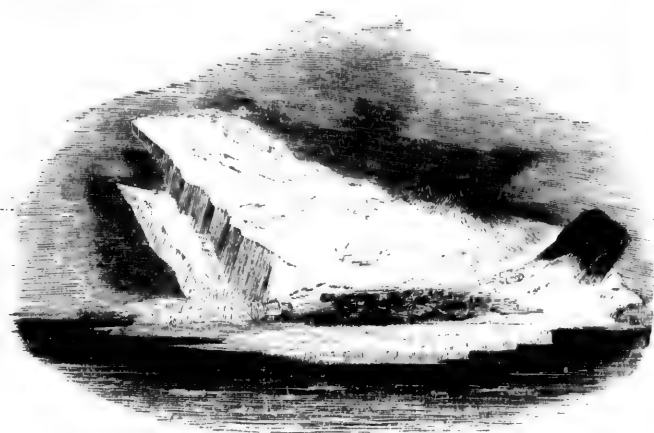
A sleep in
the open
air.

The spot at which we landed I have called Cape James Kent. It was a lofty headland, and the land-ice which hugged its base was covered with rocks from the cliffs above. As I looked over this ice-belt, losing itself in the far distance, and covered with its millions of tons of rubbish, greenstones, limestones, chlorite slates, rounded and angular, massive and ground to powder, its importance as a geological agent in the transportation of drift struck me with great force. Its whole substance was studded with these varied contributions from the shore ; and further to the south, upon the now frozen waters of Marshall Bay, I could recognise raft after raft from the last year's ice-belt, which had

Cape
James
Kent.

CHAPTER
XLVII.

been caught by the winter, each one laden with its heavy freight of foreign material.



ICE-RAFT.

Causes of
the de-
tachment
of masses
of ice from
the ice-
belt.

The water-torrents and thaws of summer unite with the tides in disengaging the ice-belt from the coast; but it is not uncommon for large bergs to drive against it and carry away the growths of many years. I have found masses that had been detached in this way, floating many miles out to sea,—long, symmetrical tables, two hundred feet long by eighty broad, covered with large angular rocks and boulders, and seemingly impregnated through-



RAFT OF SLATES.

out with detrited matter. These rafts in Marshall Bay were so numerous, that, could they have melted as I saw them, the

bottom of the sea would have presented a more curious study for the geologist than the boulder-covered lines of our middle latitudes.

One in particular, a sketch of which I attach, had its origin in a valley where rounded fragments of water-washed greenstone

CHAPTER
XLVII.

Frag-
ments of
green-
stone in
the ice-
belt.



ROCHE MOUTONNÉE, IN ICE-BELT.

had been poured out by the torrents and frozen into the coast-ice of the belt. The attrition of subsequent matter had truncated



STRIATED BOULDER FROM MARY LEIPER FIORD.

the great egg-shaped rock, and worn its sides into a striated face, whose scratches still indicated the line of water-flow.

Striated
boulder.

On the south-eastern corner of this bay, where some low islands at the mouth of the fiord formed a sort of protection

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XLVII.

against the north wind, was a group of Esquimaux remains,—huts, cairns, and graves. Though evidently long deserted, my drivers seemed to know all about them, for they suspended the hunt around the bergs to take a look at these evidences of a by-gone generation of their fathers.

Deserted
huts

There were five huts, with two stone pedestals for the protection of meat, and one of those strange little kennels which serve as dormitories when the igloë is crowded. The graves were further up the fiord: from them I obtained a knife of bone, but no indications of iron.

Remains
round the
old home-
steads.

These huts stood high up, upon a set of shingle-terraces, similar to those of Rensselaer Bay. The belt-ice at their foot was old and undisturbed, and must have been so for years; so, too, was the heavy ice of the bay. Yet around these old homesteads were bones of the seal and walrus, and the vertebræ of a whale similar to that at the igloë of Anootok. There must have been both open water and a hunting-ground around them, and the huts had in former days been close upon this water-line. "Una suna nuna?" "What land is this, Kalutunah?" I did not understand his answer, which was long and emphatic; but I found from our interpreter that the place was still called "the inhabited spot;" and that a story was well preserved among them of a time when families were sustained beside its open water and musk-ox inhabited the hills. We followed the belt-ice, crossing only at the headlands of the bays, and arrived at the brig on the afternoon of Wednesday.

Bear-
hunts.

Our whole journey had been an almost unbroken and scarcely-varied series of bear-hunts. They had lost for me the attractions of novelty; but, like the contests with the walrus, they were always interesting, because characteristic of this rude people.

Training
of the
dogs.

The dogs are carefully trained not to engage in contest with the bear, but to retard its flight. While one engrosses his attention ahead, a second attacks him in the rear; and, always alert, and each protecting the other, it rarely happens that they are seriously injured, or that they fail to delay the animal until the hunters come up.

Let us suppose a bear scented out at the base of an iceberg. The Esquimaux examines the track with sagacious care, to determine its age and direction, and the speed with which the animal

was moving when he passed along. The dogs are set upon the trail, and the hunter courses over the ice at their side in silence. As he turns the angle of the berg his game is in view before him, stalking probably along with quiet march, sometimes snuffing the air suspiciously, but making, nevertheless, for a nest of broken hummocks. The dogs spring forward, opening in a wild wolfish yell, the driver shrieking "Nannook! nannook!" and all straining every nerve in pursuit.

The bear rises on his haunches, inspects his pursuers, and starts off at full speed. The hunter, as he runs, leaning over his sledge, seizes the traces of a couple of his dogs, and liberates them from their burden. It is the work of a minute; for the motion is not checked, and the remaining dogs rush on with apparent ease.

Now, pressed more severely, the bear makes for an iceberg and stands at bay, while his two foremost pursuers halt at a short distance and quietly await the arrival of the hunter. At this moment the whole pack are liberated; the hunter grasps his lance, and, tumbling through the snow and ice, prepares for the encounter.

If there be two hunters, the bear is killed easily; for one makes a feint of thrusting a spear at the right side, and, as the animal turns with his arms towards the threatened attack, the left is unprotected and receives the death-wound.

But if there be only one hunter, he does not hesitate. Grasping the lance firmly in his hands, he provokes the animal to pursue him by moving rapidly across its path, and then running as if to escape. But hardly is its long, unwieldy body extended for the solicited chase, before with a rapid jump the hunter doubles on his track and runs back toward his first position. The bear is in the act of turning after him again when the lance is plunged into the left side, below the shoulder. So dexterously has this thrust to be made, that an unpractised hunter has often to leave his spear in the side of his prey and run for his life. But even then, if well aided by the dogs, a cool, skilful man seldom fails to kill his adversary.

Many wounds are received by the Etah Bay Esquimaux in these encounters. The bear is looked upon as more fierce in that neighbourhood, and about Anokatok and Rensselaer Bay, than around the broken ice to the south. He uses his teeth much

CHAPTER
XLVII.The game
in view.

The chase.

The en-
counter.The
solitary
hunter.Wounds
in the
chase.

CHAPTER
XLVII.Habits of
the polar
bear.

more generally than is supposed by systematic writers. The hugging, pawing, and boxing, which characterize the black and grisly bears, are resorted to by him only under peculiar circumstances. While wandering over his icy fields, he will rear himself upon his hind legs to enlarge his circle of vision; and I have often seen him in this attitude pawing the air, as if practising for an apprehended conflict. But it is only when absolutely beset, or when the female is defending her cub, that the Polar bear shows fight upon its haunches. Among seven hunters who visited the brig last December, no less than five were scarred by direct teeth-wounds of bears. Two of these had been bit in the calves of the legs while running, and one, our friend Metek, had received a like dishonourable wound somewhat higher. Our dogs were seized by the nape of the neck, and flung violently many paces to one side.

The bear-hunt ranks foremost among the exhibitions of personal prowess. My intelligent friend Kalutunah excelled in it. Shanghu, his principal associate, was also skilful as well as daring.

Departure
of Kalu-
tunah and
Shanghu.

They both left the brig after a day's rest, fully laden with wood and other presents, and promising to engage Metek, if they could, to come up with his four dogs. They themselves engaged to lend me one dog from each of their teams. It pleased me to find that I had earned character with these people, at first so suspicious and distrustful. They left on board each man his dog, without a shade of doubt as to my good faith, only begging me to watch the poor animals' feet, as the famine had nearly exterminated their stock.

Prospect
of leaving
the brig.

The month of May had come. Metek, less confiding because less trustworthy than Kalutunah, did not bring his dogs, and my own exhausted team was in almost daily requisition to bring in supplies of food from Etah. Everything admonished me that the time was at hand when we must leave the brig and trust our fortunes to the fates. Our preparations were well advanced, and the crew so far restored to health that all but three or four could take some part in completing them.

A last
effort.

Still, I could not allow myself to pass away from our region of search without a last effort to visit the further shores of the channel. Our communications with the Esquimaux, and some successful hunts of our own, had given us a stock of provisions

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for at least a week in advance. I conferred with my officers, made a full distribution of the work to be performed in my absence, and set out once more, with Morton for my only companion. We took with us the light sledge, adding the two borrowed dogs to our team, but travelling ourselves on foot. Our course was to be by the middle ice, and our hope that we might find it free enough from hummocks to permit us to pass.

My journal, written after our return, gives nothing but a series of observations going to verify and complete my charts. We struggled manfully to force our way through,—days and nights of adventurous exposure and recurring disaster, and at last found our way back to the brig, Morton broken down anew, and my own energies just adequate to the duty of supervising our final departure. I had neither time nor strength to expend on my diary.

The operations of the search were closed.

CHAPTER
XLVII.
A last expedition.

Its failure.
The search closed.

CHAPTER XLVIII

PREPARATIONS FOR ESCAPE — PROVISIONS — BOATS—THE SLEDGES — INSTRUMENTS AND ARMS—COOKING APPARATUS—TABLE FURNITURE—CRADLING THE BOATS—THE SLEDGES MOVING—THE RECREATION.

CHAPTER
XLVIII.
—
Arduous
and labo-
rions pre-
parations.

THE detailed preparations for our escape would have little interest for the general reader ; but they were so arduous and so important that I cannot pass them by without a special notice. They had been begun from an early day of the fall, and had not been entirely intermitted during our severest winter-trials. All who could work, even at picking over eider-down, found every moment of leisure fully appropriated. But since our party had begun to develop the stimulus of more liberal diet, our labours were more systematic and diversified.

Manufac-
ture of
clothing.

The manufacture of clothing had made considerable progress. Canvas moccasins had been made for every one of the party, and three dozen were added as a common stock to meet emergencies. Three pairs of boots were allowed each man. These were generally of carpeting, with soles of walrus and seal hide ; and when the supply of these gave out, the leather from the chafing-gear of the brig for a time supplied their place. A much better substitute was found afterward in the gutta-percha that had formed the speaking-tube. This was softened by warm water, cut into lengths, and so made available to its new uses. Blankets were served out as the material for body-clothing : every man was his own tailor.

Bedding.

For bedding, the woollen curtains that had formerly decorated our berths supplied us with a couple of large coverlets, which were abundantly quilted with eider-down. Two buffalo-robos of the same size with the coverlets were arranged so as to button on them, forming sleeping sacks for the occasion, but easily detached for the purpose of drying or airing.

Provision-
bags.

Our provision-bags were of assorted sizes, to fit under the thwarts of the boats. They were of sail-cloth, made water-tight by tar and pitch, which we kept from penetrating the canvas by

first coating it with flour-paste and plaster of Paris. The bread-bags were double, the inner saturated with paste and plaster by boiling in the mixture, and the space between the two filled with pitch. Every bag was, in sailor-phrases, roped and becketed; in ordinary parlance, well secured by cordage.

These different manufactures had all of them being going on through the winter, and more rapidly as the spring advanced. They had given employment to the thoughts of our sick men, and in this way had exerted a wholesome influence on their moral tone and assisted their convalescence. Other preparations had been begun more recently. The provisions for the descent were to be got ready and packed. The ship-bread was powdered by beating it with a capstan-bar, and pressed down into the bags which were to carry it. Pork-fat and tallow were melted down, and poured into other bags to freeze. A stock of concentrated bean-soup was cooked, and secured for carriage like the pork-fat; and the flour and remaining meat-biscuit were to be protected from moisture in double bags. These were the only provisions we were to carry with us. I knew I should be able to subsist the party for some time after their setting out by the food I could bring from the vessel by occasional trips with my dog-team. For the rest we relied upon our guns.

Besides all this, we had our camp-equipage to get in order, and the vitally-important organization of our system of boats and sledges.

Our boats were three in number, all of them well battered by exposure to ice and storm, almost as destructive of their seaworthiness as the hot sun of other regions. Two of them were cypress whaleboats, twenty-six feet long, with seven feet beam, and three feet deep. These were strengthened with oak bottom-pieces and a long string-piece bolted to the keel. A washboard of light cedar, about six inches high, served to strengthen the gunwale and give increased depth. A neat housing of light canvas was stretched upon a ridge-line sustained fore and aft by stanchions, and hung down over the boat's sides, where it was fastened (stopped) to a jack-stay. My last year's experience on the attempt to reach Beechy Island determined me to carry but one mast to each boat. It was stepped into an oaken thwart, made especially strong, as it was expected to carry sail over ice as

CHAPTER
XLVIII.

Whole-
some
effect of
employ-
ment on
the sick.

Provisions
for the
journey.

Camp
equipage.

Boats.

CHAPTER
XLVIII.The *Red
Eric*.

well as water; the mast could be readily unshipped, and carried, with the oars, boat-hooks, and ice-poles, alongside the boat. The third boat was my little *Red Eric*. We mounted her on the old sledge, the *Faith*, hardly relying on her for any purposes of navigation, but with the intention of cutting her up for firewood in case our guns should fail to give us a supply of blubber.

Indeed, in spite of all the ingenuity of our carpenter, Mr. Ohlsen, well seconded by the persevering labours of M'Gary and Bonsall, not one of our boats was positively sea-worthy. The *Hope* would not pass even charitable inspection, and we expected to burn her on reaching water. The planking of all of them was so dried up that it could hardly be made tight by calking.

The boats
mounted
on sledges.

The three boats were mounted on sledges rigged with rue-raddies; the provisions stowed snugly under the thwarts; the chronometers, carefully boxed and padded, placed in the stern-sheets of the *Hope*, in charge of Mr. Sontag. With them were such of the instruments as we could venture to transport. They consisted of two Gambey sextants, with artificial horizon, our transit-unifilar, and dip-instruments. Our glasses, with a few of the smaller field-instruments, we carried on our persons. Our fine theodolite we were forced to abandon.

Instru-
ments.Arms and
ammunition.

Our powder and shot, upon which our lives depended, were carefully distributed in bags and tin canisters. The percussion-caps I took into my own possession, as more precious than gold. Mr. Bonsall had a general charge of the arms and ammunition. Places were arranged for the guns, and hunters appointed for each boat. Mr. Petersen took charge of the most important part of our field-equipage, our cooking gear. Petersen was our best tinker. All the old stove-pipe, now none the better for two winters of Arctic fires, was called into requisition. Each boat was provided with two large iron cylinders, fourteen inches in diameter and eighteen high. Each of them held an iron saucer or lamp, in which we could place our melted pork-fat or blubber, and, with the aid of spun-yarn for a wick, make a roaring fire. I need not say that the fat and oil always froze when not ignited.

Cooking
apparatus.

Into these cylinders, which were used merely to defend our lamp from the wind and our pots from contact with the cold air, we placed a couple of large tin vessels, suitable either for melting snow or making tea or soup. They were made out of cake-cani-

sters cut down. How many kindly festival associations hung by these now abused soup-cans! one of them had, before the fire rubbed off its bright gilding, the wedding-inscription of a large fruit-cake.

We carried spare tins in case the others should burn out; it was well we did so. So completely had we exhausted our household furniture, that we had neither cups nor plates, except crockery. This, of course, would not stand the travel, and our spare tin had to be saved for protecting the boats from ice. At this juncture we cut plates out of every imaginable and rejected piece of tinware. Borden's meat-biscuit canisters furnished us with a splendid dinner-service; and some rightly-feared tin jars, with ominous labels of Corrosive Sublimate and Arsenic, which once belonged to our department of natural history, were emptied, scoured, and cut down into tea-cups.

Recognising the importance of acting directly upon the men's minds, my first step now was to issue a general order appointing a certain day, the 17th of May, for setting out. Every man had twenty-four hours given him to select and get ready his eight pounds of personal effects. After that, his time was to cease to be his own for any purpose. The long-indulged waywardness of our convalescents made them take this hardly. Some who were at work on articles of apparel that were really important to them threw them down unfinished, in a sick man's pet. I had these in some cases picked up quietly and finished by others. But I showed myself inexorable. It was necessary to brace up and concentrate every man's thoughts and energies upon the one great common object, our departure from the vessel on the 17th, not to return.

I tried my best also to fix and diffuse impressions that we were going home. But in this I was not always successful; I was displeased, indeed, with the moody indifference with which many went about the tasks to which I put them. The completeness of my preparations I know had its influence; but there were many doubters. Some were convinced that my only object was to move further south, retaining the brig, however, as a home to retreat to. Others whispered that I wanted to transport the sick to the hunting-grounds and other resources of the lower settlements, which I had such difficulty in preventing the mutinous from securing for themselves alone. A few of a more cheerful spirit thought I had

CHAPTER.
XLVIII.

Singular
table ser-
vice.

Day fixed
for de-
parture.

Efforts
to cheer
the men.

Complete-
ness.

CHAPTER
XLVIII.Cradling
the boats
and mov-
ing them
to the ice-
foot.

resolved to make for some point of look-out, in the hope of a rescue by whalers or English expedition-parties which were supposed still to be within the Arctic circle. The number is unfortunately small of those human beings whom calamity elevates.

There was no sign or affectation of spirit or enthusiasm upon the memorable day when we first adjusted the boats to their cradles on the sledges and moved them off to the ice-foot. But the ice immediately around the vessel was smooth; and, as the boats had not received their lading, the first labour was an easy one. As the runners moved, the gloom of several countenances were perceptibly lightened. The croakers had protested that we could not stir an inch. These cheering remarks always reach a commander's ears, and I took good care of course to make the outset contradict them. By the time we reached the end of our little level, the tone had improved wonderfully, and we were prepared for the effort of crossing the successive lines of the belt-ice and forcing a way through the smashed material which interposed between us and the ice-foot.

Attempt at
an orna-
mental ex-
hibition.

This was a work of great difficulty, and sorrowfully exhausting to the poor fellows not yet accustomed to heave together. But in the end I had the satisfaction, before twenty-four hours were over, of seeing our little arks of safety hauled upon the higher plane of the ice-foot, in full trim for ornamental exhibition from the brig; their neat canvas housing rigged tent-fashion over the entire length of each; a jaunty little flag, made out of one of the commander's obsolete linen shirts, decorated in stripes from a disused article of stationery, the red-ink bottle, and with a very little of the blue-bag in the star-spangled corner. All hands after this returned on board; I had ready for them the best supper our supplies afforded, and they turned in with minds prepared for their departure next day.

Gradual
training
for the
journey.

They were nearly all of them invalids, unused to open air and exercise. It was necessary to train them very gradually. We made but two miles the first day, and with a single boat; and indeed for some time after this I took care that they should not be disheartened by overwork. They came back early to a hearty supper and warm beds, and I had the satisfaction of marching them back each recurring morning refreshed and cheerful. The weather, happily, was superb.

CHAPTER XLIX.

THE PLEDGES—THE ARGUMENT—FAREWELL TO THE BRIG—THE MUSTER—
THE ROUTINE—THE MESSES.

OUR last farewell to the brig was made with more solemnity. The entire ship's company was collected in our dismantled winter-chamber to take part in the ceremonial. It was Sunday. Our moss walls had been torn down, and the wood that supported them burned. Our beds were off at the boats. The galley was unfurnished and cold. Everything about the little den of refuge was desolate.

We read prayers and a chapter of the Bible; and then, all standing silently round, I took Sir John Franklin's portrait from its frame and cased it in an India-rubber scroll. I next read the reports of inspection and survey which had been made by the several commissions organized for the purpose, all of them testifying to the necessities under which I was about to act. I then addressed the party: I did not affect to disguise the difficulties that were before us; but I assured them that they could all be overcome by energy and subordination to command: and that the thirteen hundred miles of ice and water that lay between us and North Greenland could be traversed with safety for most of us, and hope for all. I added, that as men and messmates, it was the duty of us all, enjoined by gallantry as well as religion, to postpone every consideration of self to the protection of the wounded and sick; and that this must be regarded by every man and under all circumstances as a paramount order. In conclusion, I told them to think over the trials we had all of us gone through, and to remember each man for himself how often an unseen Power had rescued him in peril, and I admonished them still to place reliance on Him who could not change.

I was met with a right spirit. After a short conference, an engagement was drawn up by one of the officers, and brought to me with the signatures of all the company, without an exception. It read as follows:—

CHAPTER
XLIX.
—
The last
Sunday.

Prayers
and read-
ing.

Captain
Kane's
address to
the men

Effect of
the ad-
dress.

"SECOND GRINNELL EXPEDITION,

"BRIG ADVANCE, *May 20, 1855.*CHAPTER
XLIX.Voluntary
engage-
ment
signed by
officers
and men.

"The undersigned, being convinced of the impossibility of the liberation of the brig, and equally convinced of the impossibility of remaining in the ice a third winter, do fervently concur with the commander in his attempt to reach the south by means of boats.

"Knowing the trials and hardships which are before us, and feeling the necessity of union, harmony, and discipline, we have determined to abide faithfully by the expedition and our sick comrades, and to do all that we can, as true men, to advance the objects in view.

"HENRY BROOKS,
JAMES M'GARY,
GEORGE RILEY,
WILLIAM MORTON,
C. OHLSEN,

J. WALL WILSON,
AMOS BONSALE,
I. I. HAYES,
AUGUST SONTAG,
&c. &c."

Memorial
of the
reasons for
leaving
the vessel.

I had prepared a brief memorial of the considerations which justified our abandonment of the vessel, and had read it as part of my address. I now fixed it to a stanchion near the gangway, where it must attract the notice of any who might seek us hereafter, and stand with them as my vindication for the step, in case we should be overtaken by disaster. It closed with these words:—

"I regard the abandonment of the brig as inevitable. We have by actual inspection but thirty-six days' provisions, and a careful survey shows that we cannot cut more firewood without rendering our craft unseaworthy. A third winter would force us, as the only means of escaping starvation, to resort to Esquimaux habits and give up all hope of remaining by the vessel and her resources. It would therefore in no manner advance the search after Sir John Franklin.

"Under any circumstances, to remain longer would be destructive to those of our little party who have already suffered from the extreme severity of the climate and its tendencies to disease. Scurvy has enfeebled more or less every man in the expedition; and an anomalous spasmodic disorder, allied to tetanus, has cost us the life of two of our most prized comrades.

"I hope, speaking on the part of my companions and myself,

that we have done all that we ought to do to prove our tenacity of purpose and devotion to the cause which we have undertaken. This attempt to escape by crossing the southern ice on sledges is regarded by me as an imperative duty,—the only means of saving ourselves and preserving the laboriously-earned results of the expedition.

“E. K. KANE,

“Com. Grinnell Expedition.

“ADVANCE, RENSSELAER BAY, May 20, 1855.”

We then went upon deck: the flags were hoisted and hauled down again, and our party walked once or twice around the brig, looking at her timbers and exchanging comments upon the scars which reminded them of every stage of her dismantling. Our figure-head—the fair Augusta, the little blue girl with pink cheeks, who had lost her breast by an iceberg and her nose by a nip off Bedevilled Reach—was taken from our bows and placed aboard the “Hope.” “She is at any rate wood,” said the men, when I hesitated about giving them the additional burden; “and if we cannot carry her far we can burn her.”

No one thought of the mockery of cheers: we had no festival-liquor to mislead our perception of the real state of things. When all hands were quite ready, we scrambled off over the ice together, much like a gang of stevedores going to work over a quayful of broken cargo.

On reaching the boats, the party were regularly mustered and divided between the two. A rigid inspection was had of every article of personal equipment. Each man had a woollen under-dress and an Esquimaux suit of fur clothing,—kapetah, nessak, and nannooke complete, with boots of our own make; that is to say, one pair of canvass faced with walrus-hide, and another inside made of the cabin Brussels carpet. In addition to this, each carried a rue-raddy adjusted to fit him comfortably, a pair of socks next his skin, and a pair of large goggles for snow-blindness, made Esquimaux fashion by cutting a small slit in a piece of wood. Some of us had gutta percha masks fitting closely to the face, as large as an ordinary domino; but these were still less favourable to personal appearance than the goggles. The provision-bags and other stores were numbered, and each man and officer had his

CHAPTER
XLIX.

A last look
at the
brig.

Removal
of the
“fair
Augusta.”

Departure.

The muster and
inspection
of the
party.

CHAPTER
XLIX.

own bag and a place assigned for it, to prevent confusion in rapid stowing and unstowing.

Number of
men able
work.

Excluding four sick men, who were unable to move, and myself, who had to drive the dog-team and serve as common carrier and courier, we numbered but twelve men,—which would have given six to a sledge, or too few to move it. It was therefore necessary to concentrate our entire force upon one sledge at a time. On the other hand, however, it was important to the efficiency of our organization that matters of cooking, sleeping baggage, and rations, should be regulated by separate messes.

Daily
routine.

The routine I established was the most precise:—Daily prayers both morning and evening, all hands gathering round in a circle and standing uncovered during the short exercise; regulated hours; fixed duties and positions at the track-lines and on the halt; the cooking to be taken by turns, the captains of the boats alone being excused. The charge of the log was confided to Dr. Hayes, and the running survey to Mr. Sontag. Though little could be expected from either of these gentlemen at this time, I deemed it best to keep up the appearance of ordinary voyaging; and after we left the first ices of Smith's Straits I was indebted to them for valuable results. The thermometer was observed every three hours.

Organiza-
tion of the
party.

To my faithful friend and first officer, boatswain Brooks, I assigned the command of the boats and sledges. I knew how well he was fitted for it; and when forced, as I was afterward during the descent, to be in constant motion between the sick-station, the Esquimaux settlements, and the deserted brig, I felt safe in the assurance of his tried fidelity and indomitable resolution. The party under him was marshalled at the rue-raddies as a single gang; but the messes were arranged with reference to the two whale-boats, and when we came afterward to the open water the crews were distributed in the same way:—

To the Faith.

JAMES M'GARY,
CHRISTIAN OHLSEN,
AMOS BONBALL,
CARL J. PETERSEN,
THOMAS HICKEY,

To the Hope.

WILLIAM MORTON,
AUGUST SONTAG,
GEORGE RILEY,
JOHN BLAKE,
WILLIAM GODFREY.

With this organization we set out on our march.

CHAPTER L.

THE SICK HUT—TO FIRST RAVINE—MOVING THE SICK—THE HEALTH-STATION—CONVALESCENCE

I HAD employed myself and the team from an early day in furnishing out accommodations for the sick at Anoatok. I have already described this station as the halting-place of our winter journeys. The hut was a low dome of heavy stones, more like a cave than a human habitation. It was perched on the very point of the rocky promontory which I have named after Captain Inglefield, of the British Navy. Both to the north and south it commanded a view of the ice-expanse of the straits; and what little sunshine ever broke through the gorges by which it was environed encouraged a perceptible growth of flowering plants and coarse grasses on the level behind it. The ice-belt now beautifully smooth, brought us almost to the edge of this little plain.

I had made up my mind from an early period that, in the event of our attempting to escape upon the ice, the "wind-loved spot," as the Esquimaux poetically named it, would be well adapted to the purposes of an entrepôt, and had endeavoured within the last few weeks to fit it up also as a resting-place for our sick during the turmoil of removing from the brig. I had its broken outlet closed by a practicable door, and the roof perforated to receive a stove-pipe. Still more recently the stone platform or dais had been thoroughly cleansed, and covered with shavings which Ohlsen had saved while working at his boats. Over these again were laid my best cushions; and two blankets, all that we could spare, were employed to tapestry the walls. A small pane of glass, formerly the facing of a daguerreotype, inserted in the door, and a stove, made by combining the copper dog-vane of the galley with some dazzling tin pipes, completed the furniture. It was a gloomy hospital after all for the poor fellows, who, more than sharing all the anxiety of their comrades, could have no relief in the excitement of active toil.

I made many journeys between the brig and Anoatok while the

CHAPTER
L.
Situation
of Ano-
tok

Hut fitted
up for the
sick.

CHAPTER L.
 Storing provisions.
 arrangements for our setting out were in progress, and after the sledges were under way. All of our invalids were housed there in safety, one or two of them occupying the dog-sledge for the trip. Most of our provision for the march and voyage of escape had also been stacked in the neighbourhood of the huts: eight hundred pounds out of fifteen hundred were already there. The remaining seven hundred I undertook to carry myself, as I had done most of the rest. It would have been folly to encumber my main body with anything more than their boats and sledges; they were barely able at first to carry even these. Our effort to escape would indeed have resulted in miserable failure, had we been without our little Esquimaux dog-team to move the sick, and forward the intended lading of the boats, and keep up supplies along the line of march. I find by my notes that these six dogs, well worn by previous travel, carried me with a fully-burdened sledge between seven and eight hundred miles during the first fortnight after leaving the brig—a mean travel of fifty-seven miles a day.

Wonderful strength of the dogs.

First Ravine.

Up to the evening of the 23d, the progress had been a little more than a mile a day for one sledge: on the 24th, both sledges had reached First Ravine, a distance of seven miles, and the dog-sledge had brought on to this station the buffalo bags and other sleeping appliances which we had prepared during the winter. The condition of the party was such that it was essential they should sleep in comfort; and it was a rule therefore during the whole journey, never departed from unless in extreme emergency, never to begin a new day's labour till the party was refreshed from the exertions of the day before. Our halts were regulated by the condition of the men rather than by arbitrary hours, and sleep was meted out in proportion to the trials of the march. The thermometer still ranged below zero; but our housed boats, well crowded, and fully stocked with sleeping gear, were hardly uncomfortable to weary men; besides which, we slept by day when the sun was warmest, and travelled when we could avoid his greatest glare.

Equipment of the *Red Eric*.

Mr. Morton, Ohlsen, and Petersen, during this time performed a double duty. They took their turn at the sledges with the rest, but they were also engaged in preparing the *Red Eric* as a comrade boat. She was mounted on our good old sledge, the *Faith*—a sledge that, like her namesake our most reliable whaleboat, had been our very present help in many times of trouble. I be-

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lieve every man felt, when he saw her brought out, that stout work was to be done, and under auspices of good.

In the meantime I had carried Mr. Goodfellow to the sick station with my dog-sledge, and had managed to convey the rest one by one to the same spot. Mr. Wilson, whose stump was still unhealed, and who suffered besides from scurvy; George Whipple, whose tendons were so contracted that he could not extend his legs, and poor Stephenson, just able to keep the lamps burning and warm up food for the rest, were the other invalids, all incapable of moving without assistance. It is just that I should speak of the manly fortitude with which they bore up during this painful imprisonment. Dr. Hayes, though still disabled from his frozen foot, adhered manfully to the sledges.

I have already expressed my belief that this little refuge hut of Anoatok was the means of saving the lives of these four men. When they were first transported to it, they were all of them so drawn up with scurvy as to be unable to move. There was but one among them able to melt water for the rest. I attended them, myself during the first week, at every interval that I could snatch from the duty of transporting our provisions. The temperature in which they lived was at first below zero; but, as the sun rose and the warmth increased, they gradually gained strength, and were able at last to crawl out and breathe in the gladdening air.

Had I attempted to bring them down on our boat-sledges, our progress would have been seriously impeded, and their lives jeopardized. I cannot imagine a worse position for a sick and helpless man than some of those which I have described in our transit from the brig.

On the other hand, to have left them for the time behind us would have made it quite possible that they might not at last be reclaimed. Every day was making the ice travel more difficult and full of hazard till we reached the open water; and they could not fail to know this as soon as they were able to look out on the floes. My occasional visits as I passed Anoatok on my way to Etah, or as I brought supplies for them on the return, gave them assurances of continued interest in their fortunes, and advices of our progress and of their own hopes and ours.

Besides all this, there is something in the insidious disease which was their most dangerous enemy that is best combated by

CHAPTER
L.

State of
the sick.

Usefulness
of the
refuge hut
at Ano-
atok.

CHAPTER

L.

Gradual
improvement in
of the
health
the pa-
tients.

moral excitement. A change of scene, renewed or increased responsibilities, topics of active thought, incitements to physical effort, are among the very best prescriptions for men suffering with the scurvy. I have had reason to feel, while tracing these pages, how reluctantly the system renews its energies under the pressure of a daily unvarying task.

The patients at our sick station no doubt suffered much, and for a while I never parted from them without anxiety. But their health improved under the stimulus of a new mode of life ; and by the time that we called on them to rejoin us their whole tone had undergone a happy change. I congratulate myself, as I write, that all who reached the open water with me are able now to bear a part in society and toil.

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CHAPTER LI.

TO THE BRIG AGAIN—WELCOME AT THE HUT—LOG OF THE SLEDGES—
EDUCATED FAITH—GOOD-BYE TO THE BRIG—METEK'S PRAYER.

As I review my notes of the first few days of our ice-journey, I find them full of incidents, interesting and even momentous when they occurred, but which cannot claim a place in this narrative. The sledges were advancing slowly, the men often discouraged, and now and then one giving way under the unaccustomed labour; the sick at Anoatok always dreary in their solitude, and suffering, perhaps, under an exacerbation of disease, or, like the rest of us, from a penury of appropriate food. Things looked gloomy enough at times.

The *Red Boat* was completed for service in a few days, and joined the sledge-party on the floes,—an additional burden, but a necessary one, for our weary rue-raddies; and I set out for the sick-station with Mr. Goodfellow, our last remaining invalid. As my team reached the entrance of Force Bay, I saw that poor Nessark, the Esquimaux, who had carried Mr. Wilson and some stores to Anoatok, finding his sledge-load too heavy, had thrown out a portion of it upon the ice. He had naturally enough selected the bread for his jettison, an article of diet unknown among the Esquimaux, but precisely that of which our sick were most in need. I lost some time in collecting such parts of his rejected cargo as I could find, and, when I reached the huts after a twelve hours' drive, the condition of our sick men made it imperative that I should return at once to the brig. The dogs gave out while crossing the reach of Force Bay, and I was forced to camp out with them on the ice-belt, but early in the morning I came upon the fires of the sledge-party.

The men were at prayers when I first saw them; but, as they passed to the drag-ropes, I was pained to see how wearily they moved. Poor Brooks' legs were so swollen that he could not brace them in his blanket coverings, and Dr. Hayes could hardly keep his place. The men generally showed symptoms

CHAPTER
LI.

The *Red Boat* completed.

Incident at the entrance of Force Bay.

Camping out on the ice-belt.

CHAPTER
LI.Appear-
at Rens-
selaer Bay.Ravens on
board the
brigReturn to
Anoatok.Welcome
at the hut.

of increasing scurvy. It was plain that they could not hold their own without an increased allowance, if not of meat, at least of fresh bread and hot tea.

Taking with me Morton, my faithful adjutant always, I hurried on to the brig. It was in the full glare of noon that we entered the familiar curve of Rensselaer Bay. The black spars of our deserted vessel cut sharply against the shores; there was the deeply-marked snow-track that led to Observatory Island and the graves of poor Baker and Schubert, with their cairn and its white-cross beacon: everything looked as when we defiled in funeral procession round the cliffs a year before. But, as we came close upon the brig, and drove our dogs up the gang-way, along which Bonsall and myself had staggered so often with our daily loads of ice, we heard the rustling of wings, and a large raven sailed away in the air past Sylvia Headland. It was old Magog, one of a pair that had cautiously haunted near our brig during the last two years. He had already appropriated our homestead.

We lighted fires in the galley, melted pork, baked a large batch of bread, gathered together a quantity of beans and dried apples, somewhat damaged, but still eatable, and by the time our dogs had fed and rested, we were ready for the return. Distributing our supplies as we passed the squads on the floe, I hastened to Anoatok. I had taken Godfrey with us from his party, and, as it was painfully evident that the men could not continue to work without more generous food, I sent him on to Etah with the dogs, in the hope of procuring a stock of walrus-meat.

The little company at the hut welcomed my return. They had exhausted their provisions; their lamp had gone out; the snow-drift had forced its way in at the door, so that they could not close it; it was blowing a north-easter; and the thermometer, which hung against the blanketed walls, stood only sixteen degrees above zero. The poor fellows had all the will to protect themselves, but they were lame, and weak, and hungry, and disheartened. We built a fire for them of tarred rope, dried their bedding, cooked them a porridge of meat-biscuit and pea-soup, fastened up their desolate door-way, hung a dripping slab of pork-fat over their lamp-wick, and, first joining in a prayer

of thankfulness, and then a round of merry gossip, all hands forgot sickness, and privation, and distance in the contentment of our sleeping-bags. I cannot tell how long we slept, for all our watches ran down before we awoke.

The gale had risen, and it was snowing hard when I replenished the fires of our hearthstone. But we went on burning rope and fat, in a regular tea-drinking frolic, till not an icicle or even a frost-mark was to be seen on the roof. After a time Godfrey rejoined us; Metek came with him; and between their two sledges they brought an ample supply of meat. With part of this I hastened to the sledge-party. They were now off Ten-mile Ravine, struggling through the accumulated snows, and much exhausted, though not out of heart. In spite of their swollen feet, they had worked fourteen hours a day, passing in that time over some twelve miles of surface, and advancing a mile and a half on their way.

A few extracts from their log-book, as kept by Dr. Hayes, may show something of our mode of travel, though it conveys but an imperfect idea of its trials.

LOG OF SLEDGE-PARTY.

"*May 23, Wednesday.*—Mr. Bonsall, cook, called at 8 P.M. George Riley suffering from snow-blindness, but able to take a place at the drag-ropes. Read prayers, and got under way at 10½ P.M.

"Took *Faith* to bluff at head of ravine. Left Dr. Hayes there and returned for *Hope*. Carried her on to *Faith's* camp and halted. All hands very much tired. Sledges haul heavy. Snow in drifts on the ice-field, requiring a standing haul.

"Captain Kane passed us from Esquimaux hut on his way to brig, at 11 A.M., while we were sleeping. Captain Kane overtook and passed us again, with his dog-sledge and provisions cargo, on way to sick station, at two o'clock, Tuesday, while cooking, taking with him William Godfrey.

"*May 24, Thursday.*—Cook, George Riley, called at 4 P.M. Read prayers, and got under way at eight o'clock. Took *Faith* beyond the headland of yesterday. Melted snow for drink. Left Dr. Hayes here and returned for *Hope*. Carried her back to *Faith* camp by 5 A.M. of Friday, and halted. Hayes about the same;

CHAPTER
LI.

A tea-
drinking
frolic.

Journey to
relieve the
sledge
party.

Extracts
from the
logbook of
Dr. Hayes

CHAPTER
LI.

Riley's eyes better. Mr. Bonsall and M'Gary begin to give in. Slush for burning all gone. Party with *Red Boat* not yet come up.

"May 25, *Friday*.—Mr Sontag, cook, called at 6 P.M. Mr. Ohlsen, with the *Red Boat* and cargo, came up at one o'clock, bringing orders from Captain Kane. Being knocked up, he and his party turned in. After prayers, stowed the spare cargo of the whaleboats into the *Red Eric*, and all hands, except Mr. Sontag and Dr. Hayes, hauled her down to the ice-foot of the Bedevilled Reach Turn-off station, below Basalt Camp.

The *Red Eric* hauled to the ice-foot.



A SKETCH.

"Returned, and reached the whaleboats at five o'clock, Saturday morning. All hands tired, turned in. Riley's eyes well.

"May 26, *Saturday*.—Strong wind, with snow, during night Captain Kane came from south at half-past three o'clock with the dog-deam, bringing a supply of walrus-beef, with Metek and sledge."

Arrival of Captain Kane with supplies.

Once more leaving the party on the floe, Morton and myself, with Metek and his sledge in company, revisited the brig, and set ourselves to work baking bread. We had both of us ample ex-

perience in this branch of the culinary art, and I could gain some credit, perhaps, with a portion of my readers, by teaching them how bread may be raised in three hours without salt, saleratus, or shortening. But it is not the office of this book to deal in occult mysteries. The thing can be done, and we did it: *sat verbum*. The brig was dreary enough, and Metek was glad to bid it good-bye, with one hundred and fifty pounds on his dog-sledge, consigned to Mr. Brooks. But he carried besides a letter, safely trusted to his inspection, which directed that he should be sent back forthwith for another load. It was something like a breach of faith, perhaps, but his services were indispensable, and his dogs still more so. He returned, of course, for there was no escaping us; his village lay in the opposite direction, and he could not deviate from the track after once setting out. In the meantime we had cooked about a hundred pounds of flour pudding, and tried out a couple of bagfuls of pork-fat;—a good day's work,—and we were quite ready, before the subdued brightness of midnight came, to turn in to our beds. Our beds!—there was not an article of covering left on board. We ripped open the old mattresses, and, all three crawling down among the curled hair, Morton, Metek, and the Nalegak, slept as sound as vagrants on a haystack.

On Monday, the 28th, we all set out for the boats and Anootok. Both Metek and myself had our sledges heavily laden. We carried the last of our provision-bags, completing now our full complement of fifteen hundred pounds, the limit of capacity of our otherwise crowded boats.

It caused me a bitter pang to abandon our collection of objects of Natural History, the cherished fruit of so much exposure and toil; and it was hardly easier to leave some other things behind,—several of my well-tested instruments, for instance, and those silent friends, my books. They had all been packed up, hoping for a chance of saving them; and, to the credit of my comrades, let me say gratefully that they offered to exclude both clothes and food in favour of a full freight of these treasures.

But the thing was not to be thought of. I gave a last look at the desolate galley-stove, the representative of our long winter's fireside, at the still bright coppers now full of frozen water, the theobolite, the chart-box, and poor Wilson's guitar,—one more

CHAPTER

LI.

Baking
bread.Metek's
journey.Singular
sleeping
place.Return to
Anootok.Treasures
aban-
doned.A last
look.

CHAPTER at the remnant of the old moss walls, the useless daguerreotypes,
LI. and the skeletons of dog, and deer, and bear, and musk-ox,—
stopped in the rigging ;—and, that done, whipped up my dogs
so much after the manner of a sentimentalizing Christian, that
our pagan Metek raised a prayer in their behalf.

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CHAPTER LII.

NEW STATIONS—THE ICE-MARSHES—POINT SECURITY—OOPEGSOAK—
CATCHING AUKS—ANINGNAH—NESSARK.

I FOUND that Mr. Brooks had succeeded in getting his boat and sledges as far as the floe off Bedevilled Reach. I stopped only long enough to point out to him an outside track, where I had found the ice quite smooth and free from snow, and pressed my dogs for the hut. I noticed, to my great joy, too, that the health of his party seemed to be improving under our raw-meat specific, and could not find fault with the extravagant use they were making of it.

CHAPTER
LII.
Meeting
with Mr.
Brooks.

The invalids at the sick station were not as well as I could have wished; but I had only time to renew their stock of provision and give them a few cheering words. Our walrus-meat was nearly exhausted.

I had fixed upon two new stations further to the south, as the depôts to which our stores were now to be transported. One was upon the old and heavy floes off Navialik, "the big gull's place,"—a headland opposite Cape Hatherton,—the other on the level ice-plain near Littleton Island. Having now gathered our stores at Anoatok, I began with a thankful heart to move them onward. I sent on Metek to the further station with two bags of bread-dust, each weighing ninety pounds, and, having myself secured some three hundred pounds at Navialik, drove on for Etah Bay.

Two new
stations.

My long succession of journeys on this route had made me thoroughly weary of the endless waste of ice to seaward, and I foolishly sought upon this trip to vary the travel by following the ice-belt. But, upon reaching Refuge Harbour, I found the snow so heavy and the fragments from the cliffs so numerous and threatening, that I was obliged to give it up. A large chasm stopped my advance and drove me out again upon the floes.

Trying a
new route
to Etah
Bay.

Getting beyond a table-land known as Kasarsoak, or "the big

CHAPTER
LII.Change on
the ice.

promontory," I emerged from the broken ice upon a wide plain. Here I first saw with alarm that the ice had changed its character: the snow which covered it had become lead-coloured and sodden by the water from beneath, and ice-fields after ice-fields stretching before me were all covered with stained patches. As I rode along these lonely marshes, for such they were, the increased labour of the dogs admonished me that the floe was no longer to be trusted. It chilled my heart to remember the position of our boats and stores. Nearly nine hundred pounds of food, exclusive of the load now upon my sledge, were still awaiting transportation at Anoatok.

Alarming
prospect.

Two hundred more, including our shot and bullet-bags, were at the Cape Hatherton station; and Metek's load was probably by this time lying on the ice opposite M'Gary Island. Like Robinson Crusoe with his powder, the reflection came over me:—"Good God! what will become of us if all this is destroyed?"

Only by men experienced in the rapid changes of Arctic ice can the full force of this reflection be appreciated. A single gale might convert the precarious platform, over which we were travelling, into a tumultuous ice-pack. Had the boats their stores on board even, and could they break through without foundering, there was not the remotest prospect of their being liberated in open water; and I knew well what obstacles a wet, sludgy surface would present to our over-tasked and almost worn-out party.

A solitary
journey.

I determined, therefore, as soon as I could secure the meat, which was my immediate errand, to make a requisition upon the Esquimaux for two of the four dogs which were still at Etah, and by their aid to place the provisions in safety. The north cape of Littleton Island, afterward called Point Security, was selected for the purpose, and I left orders with the invalids at the sick station to be in readiness for instant removal. I pursued my journey alone.

Arrival at
Etah about
midnight.

It was quite late in the evening when I drew near Etah. I mean that it was verging on to our midnight, the sun being low in the heavens, and the air breathing that solemn stillness which belongs to the sleeping-time of birds and plants. I had not quite reached the little settlement when loud sounds of laughter came to

my ear ; and, turning the cape, I burst suddenly upon an encampment of the inhabitants. CHAPTER
LII.

Some thirty men, women, and children, were gathered together upon a little face of offal-stained rock. Except a bank of moss, which broke the wind-draught from the fiord, they were entirely without protection from the weather, though the temperature was 5° below zero. The huts were completely deserted, the snow tossed had fallen in, and the window was as free and open as summer to the purifying air. Every living thing about the settlement was out upon the bare rocks. An Esquimaux encampment.

Rudest of gypsies, how they squalled, and laughed, and snored, and rolled about ! Some were sucking bird-skins, others were boiling incredible numbers of auks in huge soapstone pots, and two youngsters, crying at the top of their voices, "Oopegsoak ! Oopegsoak !" were fighting for an owl. It was the only specimen (*Strix nyctea*) that I had seen except on the wing ; but, before I could secure it, they had torn it limb from limb, and were eating its warm flesh and blood, their faces buried among its dishevelled feathers. An Esquimaux feast.

The fires were of peat-moss greased with the fat of the bird-skins. They were used only for cooking, however, the people depending for comfort on the warmth of close contact. Old Kresut, the blind patriarch of the settlement, was the favoured centre, and around him, as a focus, was a coil of men, women, and children, as perplexing to unravel as a skein of eels. The children alone were toddling about and bringing in stores of moss, their faces smeared with blood, and titbits of raw liver between their teeth.

The scene was redolent of plenty and indolence,—the *dolce far niente* of the short-lived Esquimaux summer. Provision for the dark winter was furthest from their thoughts ; for, although the rocks were patched with sun-dried birds, a single hunting-party from Peteravik could have eaten up their entire supplies in a night. The *dolce far niente* of Esquimaux life.

There was enough to make them improvident. The little auks were breeding in the low cones of rubbish under the cliffs in such numbers that it cost them no more to get food than it does a cook to gather vegetables. A boy, ordered to climb the rocks with one of their purse-nets of seal-skin at the end

CHAPTER of a narwhal's tusk, would return in a few minutes with as many
 LII. as he could carry.



CATCHING AUKS.

The dogs seemed as happy as their masters: they were tethered by seal-skin thongs to prevent robbery, but evidently fed to the full extent of their capacity.

Aningnah
 the "witch
 of the
 caldron."

Aningnah, wife of Marsumah, was one of the presiding deities of the soup-pot, or rather first witch of the caldron. She was a tall, well-made woman, and, next to Mrs. Metek, had a larger influence than any female in the settlement.

During one of my visits to the settlement, I had relieved her from much suffering by opening a furuncle, and the kind creature never lost an opportunity of showing how she remembered it. Poor old Kresut was summarily banished from his central seat of honour, and the nalegak installed in his place. She stripped her-

self of her bird-skin kapetah to make me a coverlet, and gave me her two-year-old baby for a pillow. There was a little commotion in the tangled mass of humanity as I crawled over them to accept these proffered hospitalities; but it was all of a welcoming sort. I had learned by this time to take kindly and condescendingly the privileges of my rank; and, with my inner man well refreshed with auk-livers, I was soon asleep.

In the morning I left my own tired dogs in charge of Marsu-mah, quite confident that his wife would feed them faithfully, and took from them their only team in unequal exchange. Such had become our relations with these poor friends of ours, that such an act of authority would have gone unquestioned if it had cost them a much graver sacrifice. They saw the condition of my own travel-broken animals, and were well aware of the sufferings of our party, so long their neighbours and allies. Old Nessark filled my sledge with walrus-meat; and two of the young men joined me on foot, to assist me through the broken ice between Littleton Island and the mainland.

CHAPTER
LII.
A living
pillow.

Kindness
of the
natives.

CHAPTER LIII.

THE GAME OF BALL—MY BROTHER'S LAKE—THE POLAR SEASONS—FATE OF
THE ESQUIMAUX—THE ESQUIMAUX LIMITS—ESQUIMAUX ENDURANCE—
AWAHTOK'S HUNT—HIS ESCAPE—THE GUARDIAN WALRUS.

CHAPTER
LIII.

A play-
ground in
the snow.

BEFORE I left Etah on my return, I took an early stroll with Sip-su, "the handsome boy," to the lake back of my old travelling-route, and directly under the face of the glacier.

He led me first to the play-ground, where all his young friends of the settlement were busy in one of their sports. Each of them had a walrus-rib for a *golph* or *skinny-stick*, and they were contending to drive a *hurley*, made out of the round knob of a flipper-joint, up a bank of frozen snow. Roars of laughter greeted the impatient striker as he missed his blow at the shining ball, and eager cries told how close the match was drawing to an end. They were counting on the fingers of both hands, Eight, eight, eight,—the game is ten.

Strange,—the thought intruded itself, but there was no wisdom in it,—strange that these famine-pinched wanderers of the ice should rejoice in sports and playthings like the children of our own smiling sky, and that parents should fashion for them toy sledges, and harpoons, and nets, miniature emblems of a life of suffering and peril! how strange this joyous merriment under the monitory shadow of these jagged ice-cliffs! My spirit was oppressed as I imagined the possibility of our tarrying longer in these frozen regions; but it was ordinary life with these other children of the same Creator, and they were playing as unconcerned as the birds that circled above our heads. "Fear not, therefore: ye are of more value than many sparrows."

I do not wonder that the scene at the lake impressed my brother when he visited it on his errand of rescue. Lieutenant Hartstene and he were the only white men, except myself, that have ever seen it.

A body of ice, resplendent in the sunshine, was enclosed between the lofty walls of black basalt; and from its base a great archway

or tunnel poured out a dashing stream into the lake, disturbing its quiet surface with a horse-shoe of foam. Birds flew about in myriads, and the green sloping banks were chequered with the purple lychnis and Arctic chickweeds.

I have named this lake after my brother, for it was near its shores that, led by Myouk, he stumbled on the summer tents of the natives and obtained the evidence of our departure south. I built a large cairn here, and placed within it a copper penny, on which was scratched the letter K; but, like many other such deposits, it never met the eyes for which it was intended.

The lake abounds in fish, apparently the salmon trout; but the natives have not the art of fishing. The stream, which tunnels its way out near the glacier foot, is about ten feet in diameter; and I was assured that it never completely suspends its flow. Although the tunnel closes with ice, and the surface of the lake freezes for many feet below, the water may still be seen and heard beneath, even in midwinter, wearing its way at the base of the glacier.

This fact is of importance, as it bears upon the temperature of deep ice-beds. It shows that with an atmosphere whose mean is below zero throughout the year, and a mean summer heat but 4° above the freezing-point, these great Polar glaciers retain a high interior temperature not far from 32° , which enables them to resume their great functions of movement and discharge readily, when the cold of winter is at an end, and not improbably to temper to some extent the natural rigour of the climate. Even in the heart of the ice nature has her compensations.

The phases of the Polar year so blend and separate that it is difficult to distribute them into seasons. In the Arctic latitudes a thousand miles to the south, travellers speak of winter and summer as if the climate underwent no intermediate changes. But nature impresses no such contrasts upon any portion of her realm; and, whatever may be the registrations of the meteorologist, the rude Esquimaux of these icy solitudes derives from his own experience and necessities a more accurate and practical system of notation.

He measures his life by winters, as the American Indian does by the summers, and for a like reason. Winter is for him the great dominant period of the year; he calls it "okipok," the season of fast ice.

But when the day has come again, and the first thawing begins

CHAPTER
LIII.

My
brother's
lake.

An ever-
flowing
stream
under the
ice.

An ever-
flowing
stream
under the
ice.

Phases of
the Polar
year.

CHAPTER
LIII.

"Uper-
nasak,"
the time of
water-
drops.

"Uper-
nak," the
season of
thaws.

"Aosak,"
the inter-
val be-
tween
thaw and
frost.

"Okla-
kut," the
return of
winter.

Probable
destiny of
the Esqui-
maux
race.

to show itself in the sunshine, as winter declines before the promise of spring, he tells you that it is "upernasak," the time of water-drops. It is then the snow-bird comes back and the white ptarmigan takes a few brown feathers. His well-known heath, too, the *irsuteet* (*Andromeda tetragona*), is green again below its dried stems under the snow.

About the end of May, or a little later, comes "upernak," the season of thaws. It is his true summer. Animal and vegetable life are now back again; the flocs break upon the sea and drift in ice-rafts about the coasts; snow is disappearing from the hill-tops; and the water-torrents pour down from the long-sealed ravines and valleys.

About the middle of August the upernak has passed into the season of no ice, "aosak," the short interval between complete thaw and reconsolidation. It is never really iceless; but the flocs have now drifted to the south, and the sea along the coast is more open than at any other period. It ends with the latter weeks of September, and sees the departure of all migratory life.

The fifth season is a late fall, the "okiakut," when the water-torrents begin to freeze in the fiords, and thawing ceases except at noonday. This terminates when the young ice has formed a permanent layer on the bays, and winter returns with its long reign of cold and darkness.

It is with a feeling of melancholy that I recall these familiar names. They illustrate the trials and modes of life of a simple-minded people, for whom it seems to be decreed that the year must very soon cease to renew its changes. It pains me when I think of their approaching destiny,—in the region of night and winter, where the earth yields no fruit and the waters are locked,—without the resorts of skill or even the rude materials of art, and walled in from the world by barriers of ice without an outlet.

If you point to the east, inland, where the herds of reindeer run over the barren hills unmolested,—for they have no means of capturing them,—they will cry "Sermik," "glacier;" and question them as you may about the range of their nation to the north and south, the answer is still the same, with a shake of the head, "Sermik, sermik-soak," "the great ice-wall;" there is no more beyond.

They have no "kresuk," no wood. The drift-timber which

blesses their more southern brethren never reaches them. The bow and arrow are therefore unknown; and the kayak, the national implement of the Greenlander, which, like the palm-tree to the natives of the tropics, ministers to almost every want, exists among them only as a legendary word.

CHAPTER
LIII.
Want of
wood.

The narrow belt subjected to their nomadic range cannot be less than six hundred miles long; and throughout this extent of country every man knows every man. There is not a marriage, or a birth, or a death that is not talked over and mentally registered by all. I have a census, exactly confirmed by three separate informants, which enables me to count by name about one hundred and forty souls, scattered along from Kosoak, the Great River at the base of a glacier near Cape Melville, to the wind-loved hut of Anoatok.

Census of
the na-
tives.

Destitute as they are, they exist both in love and community of resources as a single family. The sites of their huts—for they are so few in number as not to bear the name of villages—are arranged with reference to the length of the dog-march and the seat of the hunt; and thus, when winter has built her highway and cemented into one the sea, the islands, and the main, they interchange with each other the sympathies and social communion of man, and diffuse through the darkness a knowledge of the resources and condition of all.

Love and
sympathy
among
them.

The main line of travel is then as beaten as a road at home. The dogs speed from hut to hut, almost unguided by their drivers. They regulate their time by the stars. Every rock has its name, every hill its significance; and a cache of meat deposited anywhere in this harsh wilderness can be recovered by the youngest hunter in the nation.

Their main
line of
travel.

From Cape York to a settlement at Saunders Island, called Appah, from the "Appah" or Lumme which colonize here in almost incredible numbers, the drive has been made in a single day; and thence to Netelik, on the main of Murchison Sound, in another. In a third, the long reach has been traversed by Cape Saumarez to the settlement of Karsioot, on a low tongue near Cape Robertson; and the fourth day has closed at Etah, or even Auratok, the open place,—the resting-place now of our poor deserted Oomiak-soak. This four days' travel cannot be less than six hundred miles; and Amaladok, Metek's half-brother, assured

Arrange-
ment of
resting-
places.

CHAPTER me that he had made it in three,—probably changing his
LIII. teams.

Their powers of resistance to exposure and fatigue are not greater perhaps than those of a well-trained voyager from other regions. But the necessities of their precarious life familiarize them with dangers from which the bravest among us might shrink without dishonour. To exemplify this, I select a single one from a number of adventures that were familiar in their recent history.

Adventure
of Awahtok
and
Myouk.

During the famine at Etah last winter, when we ourselves were so much distressed for fresh food, two of my friends, Awahtok and Myouk, determined to seek the walrus on the open ice. It was a performance of the greatest danger; but it was better in their eyes than the sacrifice of their dogs, and they both possessed to all the fullest extent that apathetic fatalism which belongs to all lowly-cultivated races. They succeeded in killing a large male, and were in the act of returning joyfully to their village, when a north wind broke up the ice, and they found themselves afloat. The impulse of a European would have been to seek the land; but they knew that the drift was always most dangerous on the coast, and urged their dogs toward the nearest iceberg. They reached it after a struggle, and, by great efforts, made good their landing with their dogs and the half-butchered carcass of the walrus.

Myouk's
account of
their
sufferings.

Poor Myouk, as he told the story to Petersen, made a frightful picture of their sufferings, the more so from the quiet, stoical manner with which he detailed the facts. It was at the close, he said, of the last moonlight of December, and in the midst of the heavy storm which held Petersen and myself prisoners at Anoatok. A complete darkness settled around them. They tied the dogs down to knobs of ice to prevent their losing their foothold, and prostrated themselves to escape being blown off by the violence of the wind. At first the sea broke over them, but they gained a higher level, and built a sort of screen of ice.

Afloat on
an iceberg.

On the fifth night afterward, judging as well as they could, Myouk froze one of his feet, and Awahtok lost his great toe by frost-bite. But they kept heart of grace, and ate their walrus-meat as they floated slowly to the south. The berg came twice into collision with flocs, and they thought at one time that they had passed the Utlak-soak, the Great Caldron, and had entered the North Water of Baffin's Bay. It was toward the close of the

second moonlight, after a month's imprisonment, living as only these iron men could live, that they found the berg had grounded. They liberated their dogs as soon as the young ice would bear their weight, and, attaching long lines to them, which they cut from the hide of the dead walrus, they succeeded in hauling themselves through the water-space which always surrounds an iceberg, and reaching safe ice. They returned to their village like men raised from the dead, to meet a welcome, but to meet famine along with it.

CHAPTER

LIII.

Their deliverance.

I believe the explanation was never given to me in detail, or, if it was, I have forgotten it; but the whole misadventure was referred to an infringement of some canonical ritual in their conduct of the hunt. The walrus, and perhaps the seal also, is under the protective guardianship of a special representative or prototype, who takes care that he shall have fair play. They all believe that in the recesses of Force Bay, near a conical peak which has often served me as a landmark on my sledge-journeys, a great walrus lives in the hills, and crawls out, when there is no moon, to the edge of a ravine, where he bellows with a voice far more powerful than his fellows out to sea. Ootuniah had often heard this walrus, and once, when I was crossing Bedevilled Reach, he stopped me to listen to his dismal tones. I certainly heard them, and Ootuniah said that a good hunt would come of it. I tried to talk to him about echoes; but as neither of us could understand the other, I listened quietly at last to the Big Walrus, and went my way.

The guardian walrus.

CHAPTER LIV.

THE BAKERY—THE GUITAR GHOST—THE BOAT CAMP—NESSARK'S WIFE—
OUT IN A GALE—CAPE MISERY—THE BURROW—THE RETREAT.

CHAPTER
LIV.

Necessity
of return-
ing to the
brig.

The sledge-party under Mr. Brooks had advanced to within three miles of the hut when I reached the on my return. They had found the ice more practicable, and their health was improving. But their desire for food had increased proportionably; and, as it was a well-understood rule of our commissariat not to touch the reserved provision of the boats, it became necessary to draw additional supplies from the brig. The seven hundred pounds of bread-dust, our entire stock, could not be reduced with safety.

Difficulties
of the
journey.

But the dogs were wanted to advance the contents of our Anatok storehouse to the stations further south, and I resolved to take Tom Hickey with me and walk back for another baking exploit. It was more of an effort than I counted on: we were sixteen hours on the ice, and we had forgotten our gutta-percha eyautick, or slit goggles. The glare of the sun as we entered the curve of our ice-cumbered harbour almost blinded us.

Baking in
the brig.

Tom had been a baker at home; but he assures me, with all the authority of an ancient member of the guild, that our achievement the day we came on board might be worthy of praise in the "old country;" Tom knows no praise more expanded. We kneaded the dough in a large pickled-cabbage cask, fired sundry volumes of the Penny Cyclopædia of Useful Knowledge, and converted, between duff and loaf, almost a whole barrel of flour into a strong likeness to the staff of life. It was the last of our stock; and "all the better too," said my improvident comrade, who retained some of the genius of blundering as well as the gallantry of his countrymen,—“all the better, sir, since we'll have no more bread to bake.”

Storm-
stayed by
the gale.

Godfrey came on with the dogs three days after, to carry back the fruits of our labour; but an abrupt change of the weather gave us a howling gale outside, and we were all of us storm-stayed. It

was Sunday, and probably the last time that two or three would be gathered together in our dreary cabin. So I took a Bible from one of the bunks, and we went through the old-times service. It was my closing act of official duty among my shipmates on board the poor little craft. I visited her afterward, but none of them were with me.

CHAPTER
LIV.
The last
Sunday
service in
the brig.

Tom and myself set out soon after, though the wind drove heavily from the south, leaving our companion to recover from his fatigue. We brought on our sledge-load safely, and had forgotten our baking achievement, with things of minor note, in that dreamless sleep which rewards physical exhaustion, when Godfrey came in upon us. He had had a hard chase behind the sledge, and was unwilling to confess at first what had brought him after us so soon. He had tried to forget himself among the debris of a mattress on the cabin floor, when he heard a sound from Mr. Wilson's guitar, sad and flowing in all its unearthly harmonies. He was sure he was awake, for he ran for it on the instant, and the proof was, he had left his coat behind him. The harp of Æolus had not been dreamed of in Bill's philosophy.

Godfrey
frightened
out of the
brig.

I was glad, when I reached the sick station, to find things so much better. Everybody was stronger, and, as a consequence, more cheerful. They had learned housekeeping, with its courtesies as well as comforts. Their kotluk would have done credit to Aningnah herself: they had a dish of tea for us, and a lump of walrus; and they bestirred themselves real housewife-fashion to give us the warm place and make us comfortable. I was right sorry to leave them, for the snow outside was drifting with the gale; but after a little while the dogs struck the track of the sledges, and following it with unerring instinct, did not slacken their pace till they had brought us to our companions on the floe.

Improve-
ment at
the sick
station.

They had wisely halted on account of the storm; and, with their three little boats drawn up side by side for mutual protection, had been lying to for the past two days, tightly housed, and moored fast by whale-lines to the ice. But the drifts had almost buried the *Hope*, which was the windward boat; and when I saw the burly form of Brooks emerging from the snow-covered roof, I could have fancied it a walrus rising through the ice.

Halt of the
sledge
party.

They had found it hard travel, but were doing well. Brooks's provision-report was the old story,—out of meat and nearly out of

CHAPTER
LIV.Want of
food.

bread—no pleasant news for a tired-out man, who saw in this the necessity of another trip to Etah. I was only too glad, however, to see that their appetites held, for with the animal man, as with



BOAT'S CAMP IN A STORM.

all others, while he feeds he lives. Short allowance for working-men on bread diet was, of course, out of the question. For the past week each man had eaten three pounds of duff a day, and I did not dare to check them, although we had no more flour in reserve to draw upon. But the question how long matters could go on at this rate admitted of a simple arithmetical solution.

Visit from
a party
of Esqui-
maux.

Six Esquimaux, three of them women—that ugly beauty, Nes-sark's wife, at the head of them—had come off to the boats for shelter from the gale. They seemed so entirely deferential, and to recognise with such simple trust our mutual relations of alliance, that I resolved to drive down to Etah with Petersen as interpreter, and formally claim assistance, according to their own laws, on the ground of our established brotherhood. I had thought of this before; but both Marsumah and Metek had been so en-

grossed with their bird-catching that I was loath to take them from their families. CHAPTER
LIV.

Our dogs moved slowly, and the discoloured ice admonished me to make long circuits. As we neared Littleton Island, the wind blew so freshly from the south-west that I determined to take the in-shore channel and attempt to make the settlement over land. But I was hardly under the lee of the island, when there broke upon us one of the most fearful gales I have ever experienced. It had the character and the force of a cyclone. The dogs were literally blown from their harness, and it was only by throwing ourselves on our faces that we saved ourselves from being swept away; it seemed as if the ice must give way. We availed ourselves of a momentary lull to shoulder the sledge, and, calling the affrighted dogs around us, made for the rocks of Eider Island, and after the most exhausting exertions, succeeded in gaining terra firma. Overtaken
by a storm
near
Littleton
Sound.

We were now safe from the danger that had seemed most imminent; but our condition was not improved. We were out on a blank cliff, the wind eddying round us so furiously that we could not keep our feet, and the air so darkened with the snow-wreaths that, although we were in the full daytime of the Arctic summer, we could neither see each other nor our dogs. There was not a cleft or a projecting knob that could give us refuge. I saw that we must move or die. It was impossible that the ice should continue to resist such a hurricane, and a bold channel separated us from the shore. Petersen indeed protested that the channel was already broken up and driving with the storm. We made the effort, and crossed. Out in a
gale.

We struck a headland on the main shore, where a dark horn-blende rock, perhaps thirty feet high, had formed a barricade, behind which the drifts piled themselves; and into this mound of snow we had just strength enough left to dig a burrow. We knew it soon after as Cape Misery. In a bur-
row of
snow on
Cape
Misery.

The dogs and sledge were dragged in, and Petersen and myself, reclining "spoon-fashion," cowered among them. The snow piled over us all, and we were very soon so roofed in and quilted round that the storm seemed to rage far outside of us. We could only hear the wind droning like a great fly-wheel, except when a surge of greater malignity would sweep up over our burial-place and sift

CHAPTER LIV. the snow upon the surface like hail. Our greatest enemy here was warmth. Our fur jumpers had been literally torn off our backs by the wind; but the united respiration of dogs and men melted the snow around us, and we were soon wet to the skin. It was a noisome vapour-bath, and we experienced its effects in an alarming tendency to syncope and loss of power.

Is it possible to imagine a juncture of more comic annoyance than that which now introduced itself among the terrors of our position? Toodla, our master-dog, was seized with a violent fit; and, as their custom is, his companions indulged in a family conflict upon the occasion, which was only mediated, after much effort, at the sacrifice of all that remained of Petersen's pantaloons and drawers.

We had all the longing for repose that accompanies extreme prostration, and had been fearing every moment that the combatants would bring the snow down upon us. At last down came our whole canopy, and we were exposed in an instant to the fury of the elements. I do not think, often as I have gone up on deck from a close cabin in a gale at sea, that I was ever more struck with the extreme noise and tumult of a storm.

Once more snowed up—for the drift built its crystal palace rapidly about us—we remained cramped and seething till our appetites reminded us of the necessities of the inner man. To breast the gale was simply impossible; the alternative was to drive before it to the north and east. Forty miles of floundering travel brought us in twenty hours to the party on the floes.

They too had felt the force of the storm, and had drawn up the boats with their prows to the wind, all hands housed, and wondering as much as we did that the ice still held.

CHAPTER LV.

FRESH DOGS—THE SLIDES—ROCKING-STONES—OHLSEN'S ACCIDENT—ICE-SAILING—MOUNTING THE BELT—THE ICE-MARSHES—PEKIUTLIK—HANS THE BENEDICK.

PETERSEN and myself gave up the sledge to Morton, who, with Marsumah and Nessark, set out at once to negotiate at Etah, while I took my place with the sledge-parties. CHAPTER
LV.

The ice, though not broken up by the storm, had been so much affected by it, as well as by the advancing season, that I felt we could not spare ourselves an hour's rest. The snow-fields before us to the south were already saturated with wet. Around the bergs the black water came directly to the surface, and the whole area was spotted with pools. We summoned all our energies on the 5th for this dangerous traverse; but, although the boats were unladen and everything transported by sledge, it was impossible to prevent accidents. One of the sledges broke through, carrying six men into the water; and the *Hope* narrowly escaped being lost. Her stern went down, and she was extricated with great difficulty. Melting
snow

The 6th saw the same disheartening work. The ice was almost impassable. Both sick and well worked at the drag-ropes alike, and hardly a man but was constantly wet to the skin. Fearing for the invalids at the sick station in case we should be cut off from them, I sent for Mr. Goodfellow at once, and gave orders for the rest to be in readiness for removal at a moment's notice. The ice
almost im-
passable.

The next day Morton returned from Etah. The natives had responded to the brotherly appeal of the nalegak; and they came down from the settlement, bringing a full supply of meat and blubber, and every sound dog that belonged to them. I had now once more a serviceable team. The comfort and security of such a possession to men in our critical position can hardly be realized. It was more than an addition of ten strong men to our party. I set off at once with Metek to glean from the brig her last remnant of slush (tallow), and to bring down the sick men from Anootok. Generosity
of the
natives.

As we travelled with our empty sledges along a sort of beaten

CHAPTER
LV.
Influence
of the
thaw on
the rocks.

track or road which led close under the cliffs, I realized very forcibly the influence of the coming summer upon the rocks above us. They were just released from the frost which had bound them so long and closely, and were rolling down the slopes of the debris with the din of a battle-field, and absolutely clogging the ice-belt at the foot. Here and there, too, a large sheet of rocks and earth would leave its bed at once, and, gathering mass as it travelled, move downward like a cataract of ruins. The dogs were terrified by the clamour, and could hardly be driven on till it intermitted.

Just beyond Six-mile Ravine my sledge barely escaped de-



THE SLIDE.

struction from one of these land-slides. Happily Metek was behind, and warned me of the danger just in time to cut loose the traces and drag away the sledge.

But it is not in the season of thaws only that these wonderful geological changes take place. Large rocks are projected in the fall by the water freezing in the crevices, like the Mons Meg cannon-balls. Our old boat, the *Forlorn Hope*, the veteran of my Beechy Island attempt, was stove in by one of these while drawn up under the cliffs of "Ten-mile Gorge."

The rocks which fell in this manner upon the ice-belt were rapidly imbedded by the action of the sun's heat; and it happened frequently, of course, that one more recently disengaged would overlie another that had already sunk below the surface. This, as the ice-belt subsided in the gradual thaw, had given many examples of the rocking-stone. They were of all sizes, from tons to pounds, often strangely dissimilar in material, though grouped within a narrow area, their diversity depending on the varying strata from which they came. There were some strange illustrations among them of the transporting forces of the ice-raft, which I should like to dwell on, if the character of my book and the haste with which it is approaching its close did not forbid me.

Our visit to the brig was soon over: we had very few stores to remove. I trod her solitary deck for the last time, and returned with Metek to his sledge.

I had left the party on the floes with many apprehensions for their safety, and the result proved they were not without cause. While crossing a "tide-hole," one of the runners of the *Hope's* sledge broke through, and, but for the strength and presence of mind of Ohlsen, the boat would have gone under. He saw the ice give way, and, by a violent exercise of strength, passed a capstan-bar under the sledge, and thus bore the load till it was hauled on to safer ice. He was a very powerful man, and might have done this without injuring himself; but it would seem his footing gave way under him, forcing him to make a still more desperate effort to extricate himself. It cost him his life—he died three days afterwards.

I was bringing down George Stephenson from the sick station, and my sledge being heavily laden, I had just crossed, with some anxiety, near the spot at which the accident occurred. A little way beyond we met Mr. Ohlsen, seated upon a lump of ice, and very pale. He pointed to the camp about three miles further on, and told us, in a faint voice, that he had not detained the party;

CHAPTER
LV.
Wonderful
geo.ogical
chang. a.

Rocking
stones.

Last visit
to the brig.

Break-
down of
the *Hope's*
sledge.

CHAPTER
LV.Ohlsen's
illness.

he "had a little cramp in the small of the back," but would soon be better.

I put him at once in Stephenson's place, and drove him on to the *Faith*. Here he was placed in the stern-sheets of the boat, and well muffled up in our best buffalo-robos. During all that night he was assiduously attended by Dr. Hayes ; but he sank rapidly. His symptoms had from the first a certain obscure but fatal resemblance to our winter's tetanus, which filled us with forebodings.

On Saturday, June 6, after stowing away our disabled comrade in the *Faith*, we again set all hands at the drag-ropes. The ice ahead of us bore the same character as the day before—no better, we were all perceptibly weaker, and much disheartened.

Sailing on
the ice.

We had been tugging in harness about two hours, when a breeze set in from the northward, the first that we had felt since crossing Bedevilled Reach. We got out our long steering-oar as a boom, and made sail upon the boats. The wind freshened almost to a gale ; and, heading toward the depot on Littleton Island, we ran gallantly before it.

Encoun-
tering
progress.

It was a new sensation to our foot-sore men, this sailing over solid ice. Levels which, under the slow labour of the drag-ropes, would have delayed us for hours, were glided over without a halt. We thought it dangerous work at first, but the speed of the sledges made rotten ice nearly as available as sound. The men could see plainly that they were approaching new landmarks, and leaving old ones behind. Their spirits rose ; the sick mounted the thwarts, the well clung to the gunwale ; and, for the first time for nearly a year, broke out the sailor's chorus, "Storm along, my hearty boys !"

We must have made a greater distance in this single day than in the five that preceded it. We encamped at 5 P.M. near a small berg, which gave us plenty of fresh water, after a progress of at least eight miles.

Meeting
with Sip-
su and
Nessark.

As we were halting, I saw two Esquimaux on the ice toward Life-Boat Cove ; and the well-known "Huk ! huuk !" a sort of Masonic signal among them, soon brought them to us. They turned out to be Sip-su and old Nessark. They were the bearers of good news : my dogs were refreshed and nearly able to travel again ; and, as they volunteered to do me service, I harnessed

up our united teams, and despatched Nessark to the hut to bring down Mr. Wilson and George Whipple.

CHAPTER
LV.

We expected now to have our whole party together again ; and the day would have been an active cheering one throughout, but for the condition of poor Ohlsen, who was growing rapidly worse.

From this time we went on for some days aided by our sails, meeting with accidents occasionally—the giving way of a spar or the falling of some of the party through the spongy ice—and occasionally, when the floe was altogether too infirm, labouring our way with great difficulty upon the ice-belt. To mount this solid highway, or to descend from it, the axes were always in requisition. An inclined plane was to be cut—ten, fifteen, or even thirty feet long, and along this the sledges were to be pushed and guided by bars and levers with painful labour. These are light things, as I refer to them here ; but in our circumstances, at the time I write of, when the breaking of a stick of timber was an irreparable harm, and the delay of a day involved the peril of life, they were grave enough. Even on the floes the axe was often indispensable to carve our path through the hummocks ; and many a weary and anxious hour have I looked on and toiled while the sledges were waiting for the way to open. Sometimes too, both on the land-ice and on the belt, we encountered heavy snowdrifts, which were to be shovelled away before we could get along ; and within an hour afterward, or perhaps even at the bottom of the drift, one of the sledge-runners would cut through to the water.

Difficult-
ties.

Cutting
through
the hum-
mocks.

Snow-
drifts.

It was saddening to our poor fellows, when we were forced to leave the ice-belt and push out into the open field, to look ahead at the salt ice-marshes, as they called them, studded with black pools, with only a white lump rising here and there through the lead-coloured surface, like tussocks of grass or rushes struggling through a swamp. The labour would have been too much for us, weary and broken as we were, but for the occasional assistance we derived from the Esquimaux. I remember once a sledge went so far under, carrying with it several of the party, that the boat floated loose. Just then seven of the natives came up to us—five sturdy men, and two almost as sturdy women—and, without waiting to be called on, worked with us most efficiently for more than half a day, asking no reward.

Ice-
marshes.

Help from
the Esqui-
maux.

CHAPTER
LV.Open
water at
Pekiutlik.

Still passing slowly on day after day, I am reluctant to borrow from my journal the details of anxiety and embarrassment with which it abounds throughout this period,—we came at last to the unmistakable neighbourhood of the open water. We were off Pekiutlik, the largest of the Littleton Island group, opposite “Kosoak,” the Great River. Here Mr. Wilson and George Whipple rejoined us, under the faithful charge of old Nessark. They had broken through twice on the road, but without any serious inconvenience in consequence. It was with truly thankful hearts we united in our prayers that evening.

Hans
missing.

One only was absent of all the party that remained on our rolls. Hans, the kind son and ardent young lover of Fiskernaes, my well-trusted friend, had been missing for nearly two months. I am loath to tell the story as I believe it, for it may not be the true one after all, and I would not intimate an unwarranted doubt of the constancy of boyish love. But I must explain, as far as I can at least, why he was not with us when we first looked at the open water. Just before my departure for my April hunt, Hans came to me with a long face, asking permission to visit Peteravik: “he had no boots, and wanted to lay in a stock of walrus hide for soles; he did not need the dogs; he would rather walk.” It was a long march, but he was well practised in it, and I consented of course. Both Petersen and myself gave him commissions to execute, and he left us, intending to stop by the way at Etah.

Stories and
surmises
about
Hans.

In our labours of the next month we missed Hans much. He had not yet returned, and the stories of him that came to us from Etah were the theme of much conversation and surmise among us. He had certainly called there as he promised, and given to Nessark's wife an order for a pair of boots, and he had then wended his way across the big headland to Peteravik, where Shang-hu and his pretty daughter had their home. This information was given with many an explanatory grin; for Hans was a favourite with all, the fair especially, and, as a matter of course, one of the greatest men in the country. It required all my recollections of his “old love” to make me suspend my judgment; for the boots came, as if to confirm the scandal. I never failed in my efforts afterward to find his whereabouts, and went out of our way to interrogate this and that settlement; for, independent of every-

thing like duty, I was very fond of him. But the story was every-
 where the same. Hans the faithful—yet, I fear, the faithless—
 was last seen upon a native sledge, driving south from Peteravik,
 with a maiden at his side, and professedly bound to a new princi-
 pality at Uwarrow Suk-suk, high up Murchison's Sound. Alas
 for Hans, the married man!

CHAPTER
LV.

CHAPTER LVI.

THE RED BOAT SINKING—THE LIFE-BOAT CACHE—THE OPEN WATER—
OHLSSEN'S DEATH—HIS FUNERAL—BARENTZ, OUR PRECURSOR—ACCOMMODAH
—THE PRESCRIPTION—CAPE WELCOME—THE RESOLVE.

CHAPTER
LVI.

Insecurity
of the ice.

THOUGH the condition of the ice assured us that we were drawing near the end of our sledge-journeys, it by no means diminished their difficulty or hazards. The part of the field near the open water is always abraded by the currents, while it remains apparently firm on the surface. In some places it was so transparent that we could even see the gurgling eddies below it; while in others it was worn into open holes that were already the resort of wild fowl. But in general it looked hard and plausible, though not more than a foot or even six inches in thickness.

The *Red
Eric* sinks.

This continued to be its character as long as we pursued the Littleton Island channel, and we were compelled, the whole way through, to sound ahead with the boat-hook or narwhal-horn. We learned this precaution from the Esquimaux, who always move in advance of their sledges when the ice is treacherous, and test its strength before bringing on their teams. Our first warning impressed us with the policy of observing it. We were making wide circuits with the whaleboats to avoid the tide-holes, when signals of distress from men scrambling on the ice announced to us that the *Red Eric* had disappeared. This unfortunate little craft contained all the dearly-earned documents of the expedition. There was not a man who did not feel that the reputation of the party rested in a great degree upon their preservation. It had cost us many a pang to give up our collections of natural history, to which every one had contributed his quota of labour and interest; but the destruction of the vouchers of the cruise—the log-books, the meteorological registers, the surveys, and the journals—seemed to strike them all as an irreparable disaster.

When I reached the boat everything was in confusion. Blake with a line passed round his waist, was standing up to his knees in sludge, groping for the document-box, and Mr. Bonsall, drip-

OPEN WATER—
—ACCOMMODAH

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THE NIP OFF CAPE CORNELIUS GRINNELL - FORCE BAY.

(From a sketch by J. R. Kane)



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ping wet, was endeavouring to haul the provision-bags to a place of safety. Happily the boat was our lightest one, and everything was saved. She was gradually lightened until she could bear a man, and her cargo was then passed out by a line and hauled upon the ice. In spite of the wet and the cold and our thoughts of poor Ohlsen, we greet its safety with three cheers.

CHAPTER
LVI.
The cargo
saved.

It was by great good fortune that no lives were lost. Stephenson was caught as he sank by one of the sledge-runners, and Morton, while in the very act of drifting under the ice, was seized by the hair of the head by Mr. Bonsall and saved.

We were now close upon Life-boat Cove, where nearly two years before we had made provision for just such a contingency as that which was now before us. Buried under the frozen soil, our stores had escaped even the keen scrutiny of our savage allies, and we now turned to them as essential to our relief. Mr. McGary was sent to the cache, with orders to bring everything except the salt beef. This had been so long a poison to us, that tainted as we were by scurvy, I was afraid to bring it among those who might be tempted to indulge in it.

Life-boat
Cove.

On the 12th the boats and sledges came to a halt in the narrow passage between the islands opposite Cape Misery, the scene of our late snow storm. All our cargo had been gathered together at this spot, and the rocks were covered with our stores. Out of the fourteen hundred pounds not an ounce had been sacrificed, Everything was cased in its waterproof covering, and as dry and perfect as when it had left the brig.

A halt
opposite
Cape
Misery

The Littleton Island of Captain Inglefield is one of a group of four *skiers* which flank the north-east headland of Hartstene Bay. They are of the bottom series, coarse gneisses and mica schists. When here before, at this time of the year, they were surrounded by water, and the eider ducks were breeding on their slopes. Now, as if to illustrate the difference of the seasons here, as well as the influence which they exert upon the habits of the migratory wild fowl, they were thoroughly cased in ice, and not a nest was to be seen.

Littleton
Island
group.

I ascended some eight hundred feet to the summit of Pekiutlik, and, looking out, beheld the open water, so long the goal of our struggles, spread out before me. It extended seemingly to Cape Alexander, and was nearer to the westward than the south of my

The open
water.

CHAPTER

LVI.

Choice of
route.

position by some five or six miles. But the ice in the latter direction led into the curve of the bay, and was thus protected from the wind and swell. My jaded comrades pleaded anxiously in favour of the direct line to the water; but I knew that this ice would give us both safer and better travel. I determined to adopt the inshore route. Our position at Pekiutlik, as we determined carefully by the mean of several observations, is in latitude $78^{\circ} 22' 1''$ and longitude $74^{\circ} 10'$. We connected it with Cape Alexander, and other determined stations to the north and west.

The channel between the islands was much choked with up-reared ice; but our dogs had now come back to us so much refreshed that I was able to call their services again into requisition. We carried one entire load to the main which forms the north-east headland of Hartstene Bay, and, the Esquimaux assisting us, deposited it safely on the inner side.

Ohlsen's
death.

I was with the advance boat, trying to force a way through the channel, when the report came to me from Dr. Hayes that Ohlsen was no more. He had shown, a short half hour before, some signs of revival, and Petersen had gone out to kill a few birds, in the hope of possibly sustaining him by a concentrated soup. But it was in vain: the poor fellow flushed up only to die a few minutes after.

We had no time to mourn the loss of our comrade, a tried and courageous man, who met his death in the gallant discharge of duty. It cast a gloom over the whole party; but the exigencies of the moment were upon us, and we knew not whose turn would come next, or how soon we might all of us follow him together.

Conceal-
ment of
the death
from the
Esqui-
maux.

I had carefully concealed Mr. Ohlsen's sickness from the Esquimaux, with everything else that could intimate our weakness; for, without reflecting at all upon their fidelity, I felt that with them, as with the rest of the world, pity was a less active provocative to good deeds than the deference which is exacted by power. I had therefore represented our abandonment of the brig as merely the absence of a general hunting party to the Far South, and I was willing now to keep up the impression. I leave to moralists the discussion of the question how far I erred; but I now sent them to their village under pretext of obtaining birds, and lent them our dogs to insure their departure.

The body of Mr. Ohlsen was sewed up, while they were gone,

in his own blankets, and carried in procession to the head of a little gorge on the east face of Pekiutlik, where by hard labour we consigned his remains to a sort of trench, and covered them with rocks to protect them from the fox and bear. Without the knowledge of my comrades, I encroached on our little store of sheet-lead, which we were husbanding to mend our leaky boats with, and, cutting on a small tablet his name and age—

CHRISTIAN OHLSEN,

AGED 36 YEARS,

laid it on his manly breast. The cape that looks down on him bears his name.

As we walked back to our camp upon the ice, the death of Ohlsen brought to my mind the strange parallel of our story with that of old William Barentz—a parallel which might verify that sad truth of history that human adventure repeats itself.

Account of
William
Barentz.

Two hundred and fifty-nine years ago, William Barentz, chief pilot of the States General of Holland—the United States of that day—had wintered on the coast of Novaia Zemlia, exploring the northernmost region of the Old Continent, as we had that of the New. His men, seventeen in number, broke down during the trials of the winter, and three died, just as of our eighteen three had gone. He abandoned his vessel as we had abandoned ours, took to his boats, and escaped along the Lapland coast to lands of Norwegian civilization. We had embarked with sledge and boat to attempt the same thing. We had the longer journey and the more difficult before us. He lost, as we had done, a cherished comrade by the wayside; and, as I thought of this closing resemblance in our fortunes also, my mind left but one part of the parallel incomplete—*Barentz himself perished.*

We gave two quiet hours to the memory of our dead brother, and then resumed our toilsome march. We kept up nearly the same routine as before; but, as we neared the settlements, the Esquimaux came in flocks to our assistance. They volunteered to aid us at the drag ropes. They carried our sick upon hand-sledges. They relieved us of all care for our supplies of daily food. The quantity of little auks that they brought us was enormous. They fed us and our dogs at the rate of eight thousand birds a week,

The march
resumed.

CHAPTER all of them caught in their little hand-nets. All anxiety left us
LVI. for the time. The men broke out in their old fore-castle songs ;



CARRYING THE SICK.

the sledges began to move merrily ahead, and laugh and jest drove out the old moody silence.

A medical
consultation.

During one of our evening halts, when the congregation of natives had scattered away to their camp fires, Metek and Nualik his wife came to me privately on a matter of grave consultation. They brought with them a fat, curious-looking boy. "Accommodah," said they, "is our youngest son. His sleep at night is bad, and his *nangah*"—pointing to that protuberance which is supposed to represent aldermanic dignity—"is always round and hard. He eats ossuk (blubber) and no meat, and bleeds at the nose. Besides, he does not grow." They wanted me, in my capacity of angekok soak, to charm or cure him.

The pre-
scription.

I told them, with all the freedom from mystery that distinguishes the regulated practitioner from the empiric, what must be my mode of treatment : that I must dip my hand into the salt water where the ice cut against the sea, and lay it on the offending *nangah* ; and that if they would bring to me their rotund little companion within three days, at that broad and deep Bethesda, I would signalize my consideration of the kindness of the tribe by a trial of my powers.

They went away very thankful, taking a preliminary prescrip-

tion of a lump of brown soap, a silk shirt, and a *taboo* of all further eating of ossuk ; and I had no doubt that their anxiety to have the boy duly powwowed, would urge forward our sledges and bring us early to the healing waters. We longed for them at least as much as Metek, and needed them more than Accomodah.

My little note-book closes for the week with this gratefully expounded record :—

June 16, Saturday.—Our boats are at the open water. We see its deep indigo horizon, and hear its roar against the icy beach. Its scent is in our nostrils and our hearts. CHAPTER
LVI.
Extract
from note-
book.

“Our camp is but three-quarters of a mile from the sea ; it is at the northern curve of the North Baffin polynia. We must reach it at the southern sweep of Etah Bay, about three miles from Cape Alexander. A dark headland defines the spot. It is more marked than the southern entrance of Smith's Straits. How magnificently the surf beats against its sides ! There are ridges of squeezed ice between us and it, and a broad zone of floating sludge is swelling and rolling sluggishly along its margin—formidable barriers to boats and sledges. But we have mastered worse obstacles, and by God's help we will master these.” The sea in
sight.

CHAPTER LVII.

THE FAREWELL—ATTEMPT TO EMBARK.

CHAPTER
LVII.Preparing
the boats.

WE had our boats to prepare now for a long and adventurous navigation. They were so small and heavily laden as hardly to justify much confidence in their buoyancy ; but, besides this, they were split with frost and warped by sunshine, and fairly open at the seams. They were to be calked, and swelled, and launched, and stowed, before we could venture to embark in them. A rainy south-wester, too, which had met us on our arrival, was now spreading with its black nimbus over the bay, and it looked as if we were to be storm-stayed on the precarious ice-beach. It was a time of anxiety, but to me personally of comparative rest. I resumed my journal :—

Assem-
blage of
Esqui-
maux to
bid good-
bye.

July 18, Monday.—The Esquimaux are camped by our side,—the whole settlement of Etah congregated around the ‘big caldron’ of Cape Alexander, to bid us good-bye. There are Metek, and Nualik his wife, our old acquaintance Mrs Eider-duck, and their five children, commencing with Myouk, my body-guard, and ending with the ventricose little Accomodah. There is Nessark and Anak his wife ; and Tellerk the ‘Right Arm,’ and Amaunah his wife ; and Sip-su, and Marsumah and Aningnah—and who not ? I can name them every one, and they know us as well. We have found brothers in a strange land.

Keepsakes
given.

“Each one has a knife, or a file, or a saw, or some such treasured keepsake ; and the children have a lump of soap, the greatest of all great medicines. The merry little urchins break in upon me even now as I am writing—‘Kuyanake, kuyanake, Nalegak-soak !’ ‘Thank you, thank you, big chief !’ while Myouk is crowding fresh presents of raw birds on me as if I could eat for ever, and poor Aningnah is crying beside the tent-curtain, wiping her eyes on a bird skin !

“My heart warms to these poor, dirty, miserable, yet happy beings, so long our neighbours, and of late so staunchly our friends.

Theirs is no affectation of regret. There are twenty-two of them around me, all busy in good offices to the Docto Kayens ; and there are only two women and the old blind patriarch Kresuk, 'Drift-wood,' left behind at the settlement.

"But see! more of them are coming up—boys ten years old pushing forward babies on their sledges. The whole nation is gipsying with us upon the icy meadows. A nation gipsying on the ice. LVII.

"We cook for them in our big camp kettle ; they sleep in the *Red Eric* ; a berg close at hand supplies them with water ; and thus, rich in all that they value,—sleep, and food, and drink, and companionship,—with their treasured short-lived summer sun above them, the *beau ideal* and sum of Esquimaux blessings, they seem supremely happy.

"Poor creatures ! It is only six months ago that starvation was among them : many of the faces around me have not yet lost the lines of wasting suspense. The walrus season is again of doubtful productiveness, and they are cut off from their brethren to the south, at Netelik and Appah, until winter rebuilds the avenue of ice. With all this, no thoughts of the future cross them. Babies squall, and women chatter, and the men weave their long yarns with peals of rattling hearty laughter between.

"Ever since we reached Pekiutlik, these friends of ours have considered us their guests. They have given us hand-sledges for our baggage, and taken turn about in watches to carry us and it to the water's edge. But for them our dreary journey would have been prolonged at least a fortnight, and we are so late even now that hours may measure our lives. Metek, Myouk, Nessark, Marsumah, Erkee, and the half-grown boys, have been our chief labourers ; but women, children, and dogs are all bearing their part. Kindness and generosity of the Esquimaux.

"Whatever may have been the faults of these Esquimaux heretofore, stealing was the only grave one. Treachery they may have conceived ; and I have reason to believe that, under superstitious fears of an evil influence from our presence, they would at one time have been glad to destroy us. But the day of all this has passed away. When trouble came to us and to them, and we bent ourselves to their habits,—when we looked to them to procure us fresh meat, and they found at our poor Oomiak-soak shelter and protection during their wild bear-hunts,—then we were so

CHAPTER
LVII.True
friendship
and grati-
tude of the
natives.

blended in our interests as well as modes of life, that every trace of enmity wore away. God knows that since they professed friendship—albeit the imaginary powers of the angekok-soak and the marvellous six-shooter which attested them may have had their influence—never have friends been more true. Although, since Ohlsen's death, numberless articles of inestimable value to them have been scattered upon the ice unwatched, they have not stolen a nail. It was only yesterday that Metek, upon my alluding to the manner in which property of all sorts was exposed without pilfering, explained through Petersen, in these two short sentences, the argument of their morality :—

“‘You have done us good. We are not hungry ; we will not take (steal).—You have done us good ; we want to help you ; we are friends.’”

Old
Kresuk.Natural
magic.

I made my last visit to Etah while we were waiting the issue of the storm. I saw old Kresuk (Drift-wood) the blind man, and listened to his long good-bye talk. I had passed with the Esquimaux as an angekok, in virtue of some simple exploits of natural magic ; and it was one of the regular old times entertainments of our visitors at the brig, to see my hand terrible with blazing ether, while it lifted nails with the magnet. I tried now to communicate a portion of my wonder working talent. I made a lens of ice before them, and “drew down the sun,” so as to light the moss under their kolupsut. I did not quite understand old Kresuk, and I was not quite sure he understood himself. But I trusted to the others to explain to him what I had done, and burned the back of his hand for a testimony in the most friendly manner. After all which, with a reputation for wisdom which I dare say will live in their short annals, I wended my way to the brig again.

Last news
of Hans.

We renewed our queries about Hans, but could get no further news of him. The last story is, that the poor boy and his better half were seen leaving Peteravik, “the halting-place,” in company with Shang-hu and one of his big sons. Lover as he was, and nalegak by the all-hail hereafter, joy go with him, for he was a right good fellow.

Parting
gifts.

We had quite a scene, distributing our last presents. My aniputating knives, the great gift of all, went to Metek and Nessark ; but every one had something as his special prize. Our dogs went to the community at large, as tenants in common, except Toodla-

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BIDDING FAREWELL.

From a sketch by J. F. C. C.

1897



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mik and Whitey, our representative dogs through very many trials, CHAPTER
I could not part with them, the leaders of my team ; I have them LVII.
still.

But Nualik, the poor mother, had something still to remind me Accommodated.
of. She had accompanied us throughout the transit of Etah Bay, with her boy Accomodah, waiting anxiously for the moment when the first salt water would enable me to fulfil my promised exorcisation of the demon in his stomach. There was no alternative now but to fulfil the pledge with faithful ceremony. The boy was taken to the water's edge, and his exorbitant little nangah faithfully embrocated in the presence of both his parents. I could not speak my thanks in their language, but I contributed my scanty stock of silk shirts to the poor little sufferer,—for such he was,—and I blessed them for their humanity to us with a fervour of heart which from a better man might peradventure have carried a blessing along with it.

And now it only remained for us to make our farewell to these A farewell address.
desolate and confiding people. I gathered them round me on the ice-beach, and talked to them as brothers for whose kindness I had still a return to make. I told them what I knew of the tribes from which they were separated by the glacier and the sea, of the resources that abounded in those less ungenial regions not very far off to the south, the greater duration of daylight, the less intensity of the cold, the facilities of the hunt, the frequent drift-wood, the kayak, and the fishing-net. I tried to explain to them how, under bold and cautious guidance, they might reach there in a few seasons of patient march. I gave them drawings of the coast, with its headlands and hunting-grounds, as far as Cape Shackleton, and its best camping-stations from Red Head to the Danish settlements.

They listened with breathless interest, closing their circle round its effect
me ; and, as Petersen described the big ussuk, the white whale, the bear, and the long open water hunts with the kayak and the rifle, they looked at each other with a significance not to be misunderstood. They would anxiously have had me promise that I would some day return and carry a load of them down to the settlements ; and I shall not wonder if—guided perhaps by Hans—they hereafter attempt the journey without other aid.

This was our parting. A letter which I addressed, at the

CHAPTER
LVII.

moment of reaching the settlements, to the Lutheran Missions, the tutelar society of the Esquimaux of Greenland, will attest the sincerity of my professions and my willingness to assist in giving them effect.

A launch
at mid-
night.

It was in the soft subdued light of a Sunday evening, June 17, that, after hauling our boats with much hard labour through the hummocks, we stood beside the open sea-way. Before midnight we had launched the *Red Eric*, and given three cheers for Henry Grinnell and "homeward bound," unfurling all our flags.

Obliged to
retreat in-
ward by a
gale.

But we were not yet to embark; for the gale which had been long brooding now began to dash a heavy *wind-lipper* against the floe, and obliged us to retreat before it, hauling our boats back with each fresh breakage of the ice. It rose more fiercely, and we were obliged to give way before it still more. Our goods, which had been stacked upon the ice, had to be carried further inward. We worked our way back thus, step by step, before the breaking ice, for about two hundred yards. At last it became apparent that the men must sleep and rest, or sink; and, giving up for the present all thoughts of embarking, I hauled the boats at once nearly a mile from the water's edge, where a large iceberg was frozen tight in the floes.

Halt near
an ice-
berg.

But here we were still pursued. All the next night it blew fearfully, and at last our berg crashed away through the broken ice, and our asylum was destroyed. Again we fell to hauling back the boats; until, fearing that the continuance of the gale might induce a ground-swell, which would have been fatal to us, I came to a halt near the slope of a low iceberg, on which I felt confident that we could haul up in case of the entire disruption of the floes. The entire area was already intersected with long cracks, and the surface began to show a perceptible undulation beneath our feet.

It was well for us I had not gratified the men by taking the outside track; we should certainly have been rafted off into the storm, and without an apparent possibility of escape.

I climbed to the summit of the berg; but it was impossible to penetrate the obscurity of mist, and spray, and cloud further than a thousand yards. The sea tore the ice up almost to the very base of the berg, and all around it looked like one vast tumultuous caldron, the ice-tables crashing together in every possible position with deafening clamour.

CHAPTER LVIII.

SUTHERLAND ISLAND—HAKLUYT ISLAND—NORTHUMBERLAND ISLAND—
FITZ-CLARENCE ROCK—DALRYMPLE ROCK—GIVING OUT—BREAK UP OF
THE FLOE—BROKEN DOWN—WEARY MAN'S REST—THE FOURTH—SHORT
COMMONS.

THE gale died away to a calm, and the water became as tranquil as CHAPTER
LVIII.
A calm. if the gale had never been. All hands were called to prepare for embarking. The boats were stowed, and the cargo divided between them equally; the sledges unlashed and slung outside the gunwales; and on Tuesday the 19th, at 4 P.M., with the bay as smooth as a garden-lake, I put off in the *Faith*. She was followed by the *Red Eric* on our quarter, and the *Hope* astern. In the *Faith* I had with me Mr. McGary, and Petersen, Hickey, Stephenson, and Whipple. Mr. Brooks was in the *Hope*, with Hayes, Sontag, Morton, Goodfellow, and Blake. Bonsall, Riley, and Godfrey made the crew of the *Eric*. The boats
put to sea.

The wind freshened as we doubled the westernmost point of Cape Cape
Alex-
ander. Alexander, and, as we looked out on the expanse of the sound, we saw the kittiwakes and the ivory-gulls and jagers dipping their wings in the curling waves. They seemed the very same birds we had left two years before screaming and catching fish in the beautiful water. We tried to make our first rest at Sutherland Island; Suther-
land
Island. but we found it so barricaded by the precipitous ice-belt that it was impossible to land. I clambered myself from the boat's mast upon the platform and filled our kettles with snow, and then, after cooking our supper in the boats, we stood away for Hakluyt. It was an ugly crossing: we had a short chopping sea from the south-east; and, after a while, the *Red Boat* swamped. The Red
Boat
swamped. Riley and Godfrey managed to struggle to the *Faith*, and Bonsall to the *Hope*; but it was impossible to remove the cargo of our little comrade; it was as much as we could do to keep her afloat and let her tow behind us. Just at this time, too, the *Hope* made a signal of distress; and Brooks hailed us to say that she was making water faster than he could free her.

CHAPTER
LVIII.A survey
of the ice.

The wind was hauling round to the westward, and we could not take the sea abeam. But, as I made a rapid survey of the area around me, studded already with floating shreds of floe-ice, I saw ahead the low, grey blink of the pack. I remembered well the experience of our Beechy Island trip, and knew that the margin of these large fields is almost always broken by inlets of open water which gave much the same sort of protection as the creeks and rivers of an adverse coast. We were fortunate in finding one of these, and fastening ourselves to an old floe, alongside of which our weary men turned in to sleep without hauling up the boats.

When Petersen and myself returned from an unsuccessful hunt upon the ice, we found them still asleep, in spite of a cold and drizzling rain that might have stimulated wakefulness. I did not disturb them till eight o'clock. We then retreated from our break-water of refuge, generally pulling along by the boat-hooks, but sometimes dragging our boats over the ice; and at last, bending to our oars as the water opened, reached the shore of Hakluyt Island.

Hakluyt
Island.

It was hardly less repulsive than the ice-cliffs of the day before; but a spit to the southward gave us the opportunity of hauling up as the tide rose, and we finally succeeded in transferring ourselves and all our fortunes to the land-ice, and thence to the rocks beyond. It snowed hard in the night, and the work of calking went on badly, though we expended on it a prodigal share of our remaining white lead. We rigged up, however, a tent for the sick, and re-inforced our bread-dust and tallow supper by a few birds. We had shot a seal in the course of the day, but we lost him by his sinking.

Northum-
berland
Island.

In the morning of the 22d we pushed forward through the snow-storm for Northumberland Island, and succeeded in reaching it a little to the eastward of my former landing-place. Myriads of auks greeted us, and we returned their greeting by the appropriate invitation to our table. A fox also saluted us with an admirable imitation of the "Huk-huk-huk," which among the Esquimaux is the never-unheeded call of distress; but the rascal, after seducing us a mile and a half out of our way, escaped our guns.

Our boats entered a little patch of open water that conducted us to the beach, directly below one of the hanging glaciers. The interest with which these impressed me when I was turning back

from my Beechy Island effort was justified very fully by what I saw of them now. It seemed as if a caldron of ice inside the coast-ridge was boiling over, and throwing its crust in huge fragments from the overhanging lip into the sea below. The glacier must have been eleven hundred feet high ; but even at its summit we could see lines of viscous movement.

CHAPTER
LVIII.
Hanging
glacier.

We crossed Murchison Channel on the 23d, and encamped for the night on the land-floe at the base of Cape Parry ; a hard day's travel, partly by tracking over ice, partly through tortuous and zigzag leads. The next day brought us to the neighbourhood of Fitz-Clarence Rock, one of the most interesting monuments that rear themselves along this dreary coast : in a region more familiar to men, it would be a landmark to the navigator. It rises from a field of ice like an Egyptian pyramid surmounted by an obelisk.

Fitz Clar-
ence Rock.

I had been anxious to communicate with the Esquimaux of Netelik, in the hope of gaining some further intelligence of Hans. Our friends of Etah had given me, in their own style, a complete itinerary of this region, and we had no difficulty in instructing Godfrey how to trace his way across the neck of land which stood between us and the settlement. He made the attempt, but found the snow-drift impassable ; and Petersen, whom I sent on the same errand to Tessiusak, returned equally unsuccessful.

Unsuc-
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The next day gave us admirable progress. The ice opened in leads before us, somewhat tortuous, but, on the whole, favouring, and for sixteen hours I never left the helm. We were all of us exhausted when the day's work came to a close. Our allowance had been small from the first ; but the delays we seemed fated to encounter had made me reduce them to what I then thought the minimum quantity, six ounces of bread-dust and a lump of tallow the size of a walnut : a paste or broth, made of these before setting out in the morning and distributed occasionally through the day in scanty rations, was our only fare. We were all of us glad when, running the boats under the lee of a berg, we were able to fill our kettles with snow and boil up for our great restorative tea. I may remark that, under the circumstances of most privation, I found no comforter so welcome to the party as this. We drank immoderately of it, and always with advantage.

Scanty
fare

Tea the
best resto-
rative.

While the men slept after their weary labour, M'Gary and myself climbed the berg for a view ahead. It was a saddening one.

CHAPTER
LVIII.

We had lost sight of Cary Island ; but shoreward, up Wostenholm Channel, the ice seemed as if it had not yet begun to yield to the influences of summer. Everything showed how intense the last winter had been. We were close upon the 1st of July, and had a right to look for the North Water of the whalers where we now had solid ice or close pack, both of them almost equally unfavourable to our progress. Far off in the distance—how far I

Dalrymple
Rock.

could not measure—rose the Dalrymple Rock, projecting from the lofty precipice of the island ahead ; but between us and it the land-ice spread itself from the base of Saunders's Island unbroken to the Far South.

The next day's progress was of course slow and wearisome, pushing through alternate ice and water for the land-belt. We fastened at last to the great floe near the shore, making our harbour in a crack which opened with the changes of tide.

Effects of
insuffi-
cient food.

The imperfect diet of the party was showing itself more and more in the decline of their muscular power. They seemed scarcely aware of it themselves, and referred the difficulty they found in dragging and pushing to something uncommon about the ice or sludge rather than to their own weakness. But, as we endeavoured to renew our labours through the morning fog, belted in on all sides by ice-fields so distorted and rugged as to defy our efforts to cross them, the truth seemed to burst upon every one. We had lost the feeling of hunger, and were almost satisfied with our pasty broth and the large draughts of tea which accompanied it. I was anxious to send our small boat, the *Eric*, across to the lumme-hill of Appah, where I knew from the Esquimaux we should find plenty of birds ; but the strength of the party was insufficient to drag her.

Obliged to
wait.

We were sorely disheartened, and could only wait for the fog to rise, in the hope of some smoother platform than that which was about us, or some lead that might save us the painful labour of tracking. I had climbed the iceberg ; and there was nothing in view except Dalrymple Rock, with its red brassy face towering in the unknown distance. But I hardly got back to my boat, before a gale struck us from the north-west, and a floe, taking upon a tongue of ice about a mile to the north of us, began to swing upon it like a pivot and close slowly in upon our narrow resting-place.

At first our own floe also was driven before the wind ; but in a

little while it encountered the stationary ice at the foot of the very rock itself. On the instant the wildest imaginable ruin rose around us. The men sprang mechanically each one to his station, bearing back the boats and stores; but I gave up for the moment all hope of our escape. It was not a nip, such as is familiar to Arctic navigators; but the whole platform, where we stood and for hundreds of yards on every side of us, crumbled, and crushed, and piled, and tossed itself madly under the pressure. I do not believe that of our little body of men, all of them disciplined in trials, able to measure danger while combating it,—I do not believe there is one who this day can explain how or why—hardly when, in fact—we found ourselves afloat. We only know that in the midst of a clamour utterly indescribable, through which the braying of a thousand trumpets could no more have been heard than the voice of a man, we were shaken, and raised, and whirled, and let down again in a swelling waste of broken hummocks, and, as the men grasped their boat-hooks in the stillness that followed, the boats eddied away in a tumultuous skreed of ice, and snow, and water.

CHAPTER
LVIII.Breaking
up of the
floe.Tossed in
the storm.

We were borne along in this manner as long as the unbroken remnant of the in-shore floe continued revolving,—utterly powerless, and catching a glimpse every now and then of the brazen headland that looked down on us through the snowy sky. At last the floe brought up against the rocks, the looser fragments that hung round it began to separate, and we were able by oars and boat-hooks to force our battered little flotilla clear of them. To our joyful surprise, we soon found ourselves in a stretch of the land-water wide enough to give us rowing-room, and with the assured promise of land close ahead.

Driven
powerless
before
the gale.

As we neared it, we saw the same forbidding wall of belt-ice as at Sutherland and Hakluyt. We pulled along its margin, seeking in vain either an opening of access or a nook of shelter. The gale rose, and the ice began to drive again; but there was nothing to be done but get a grapnel out to the belt and hold on for the rising tide. The *Hope* stove her bottom and lost part of her weather-boarding, and all the boats were badly chafed. It was an awful storm; and it was not without constant exertion that we kept afloat, baling out the scud that broke over us, and warding off the ice with boat-hooks.

CHAPTER
LVIII.Scaling
the ice-
cliff.

At three o'clock the tide was high enough for us to scale the ice-cliff. One by one we pulled up the boats upon a narrow shelf, the whole sixteen of us uniting at each pull. We were too much worn down to unload; but a deep and narrow gorge opened in the cliffs almost at the spot where we clambered up; and, as we pushed the boats into it on an even keel, the rocks seemed to close above our heads, until an abrupt turn in the course of the ravine placed a protecting cliff between us and the gale. We were completely encaved.

A wel-
come
sound.

Just as we had brought in the last boat, the *Red Eric*, and were shoring her up with blocks of ice, a long-unused, but familiar and unmistakable sound startled and gladdened every ear, and a flock of eiders flocking the sky for a moment passed swiftly in front of us. We knew that we must be at their breeding-grounds; and as we turned in wet and hungry to our long-coveted sleep, it was only to dream of eggs and abundance.

Egg-hunt-
ing.

We remained almost three days in our crystal retreat, gathering eggs at the rate of twelve hundred a day. Outside, the storm raged without intermission, and our egg-hunters found it difficult to keep their feet; but a merrier set of gourmands than were gathered within never surfeited in genial diet.

"Weary
Man's
Rest."

On the 3d of July the wind began to moderate, though the snow still fell heavily; and the next morning, after a patriotic egg-nog, the liquor borrowed grudgingly from our alcohol-flask, and diluted till it was worthy of temperance praise,—we lowered our boats, and bade a grateful farewell to "Weary Man's Rest." We rowed to the south-east end of Wostenholme Island; but the tide left us there, and we moved to the ice-foot.

Stopped
by the ice.

For some days after this we kept moving slowly to the south, along the lanes that opened between the belt-ice and the floe. The weather continued dull and unfavourable for observations of any sort, and we were off a large glacier before we were aware that further progress near the shore was impracticable. Great chains of bergs presented themselves as barriers in our way, the spaces between choked by barricades of hummocks. It was hopeless to bore. We tried for sixteen hours together without finding a possibility of egress. The whole sea was rugged and broken in the extreme.

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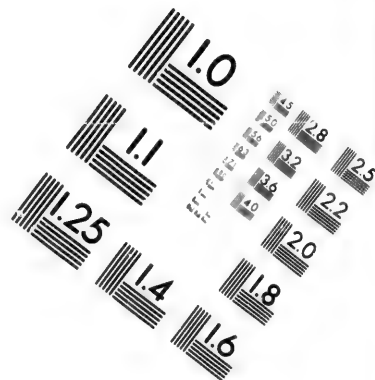
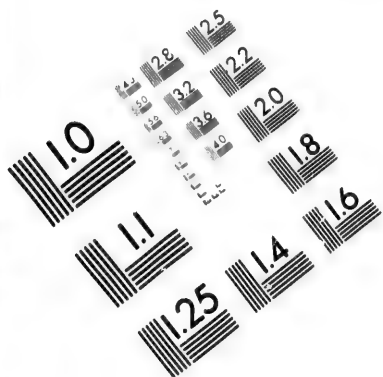
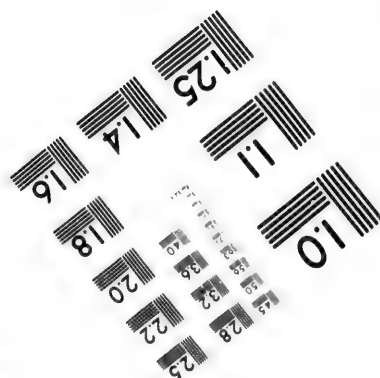
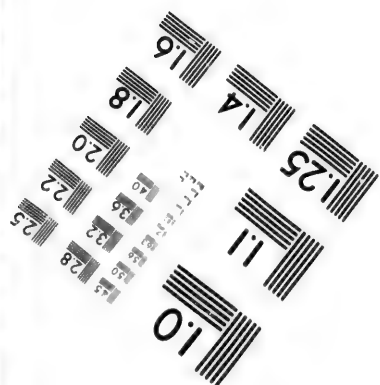
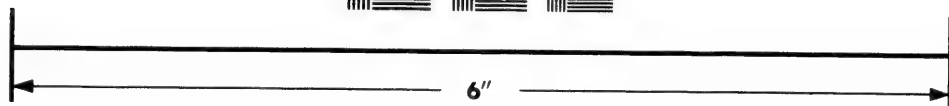
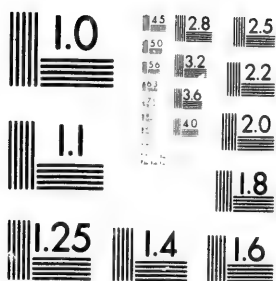


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THE ESCAPE OFF WEARY MEN'S REST.

(From a sketch by J. H. H. H.)

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feet, and, looking well to the west, was satisfied that a lead which I saw there could be followed in the direction of Conical Rocks, and beyond toward Cape Dudley Digges. But, on conferring with Brooks and McGary, I was startled to find how much the boats had suffered in the rude encounters of the last few days. The *Hope* was in fact altogether unseaworthy: the ice had strained her bottom-timbers, and it required nearly all our wood to repair her; bit by bit we had already cut up and burned the runners and cross-bars of two sledges; the third we had to reserve as essential to our ice-crossings.

In the meantime, the birds, which had been so abundant when we left Dalrymple's Island, and which we had counted on for a continuous store, seemed to have been driven off by the storm. We were again reduced to short daily rations of bread-dust, and I was aware that the change of diet could not fail to tell upon the strength and energies of the party. I determined to keep in-shore, in spite of the barricades of ice, in the hope of renewing, to some extent at least, our supplies of game. We were fifty-two hours in forcing this rugged passage: a most painful labour, which but for the disciplined endurance of the men might well have been deemed impracticable.

CHAPTER
LVIII.The boats
injured by
the storm.Short
rations
again.

CHAPTER LIX.

A LOOK-OUT — PROVIDENCE HALT — THE GLACIER — PROVIDENCE DIET.

CHAPTER
LIX.Another
glacier in
sight.

ONCE through the barrier, the leads began to open again, and on the 11th we found ourselves approaching Cape Dudley Digges, with a light breeze from the north-west. It looked for some hours as if our troubles were over, when a glacier came in sight not laid down on the charts, whose tongue of floe extended still further out to sea than the one we had just passed with so much labour. Our first resolve was to double it at all hazards, for our crews were too much weakened to justify another tracking through the hummocks, and the soft snow which covered the land-floes was an obstacle quite insuperable. Nevertheless, we forced our way into a lead of sludge, mingled with the comminuted ice of the glacier; but the only result was a lesson of gratitude for our escape from it. Our frail and weather-worn boats were quite unequal to the duty.

A look-out
from an
ice-berg

I again climbed the nearest berg,—for these ice-mountains were to us like the look-out hills of men at home,—and surveyed the ice to the south far on toward Cape York. My eyes never looked on a spectacle more painful. We were in advance of the season: the floes had not broken up. There was no “western water.” Here, in a *cul-de-sac*, between two barriers, both impassable to men in our condition, with stores miserably inadequate and strength broken down, we were to wait till the tardy summer should open to us a way.

An in-
hospitable
shore.

I headed for the cliffs. Desolate and frowning as they were, it was better to reach them and halt upon the inhospitable shore than await the fruitless ventures of the sea. A narrow lead, a mere fissure at the edge of the land-ice, ended opposite a low platform; we had traced its whole extent, and it landed us close under the shadow of the precipitous shore.

My sketch, intended to represent this wild locality, gives a very imperfect idea of the scene.

Where the cape lies directly open to the swell of the north-west winds, at the base of a lofty precipice there was left still clinging

to the rock a fragment of the winter ice-belt not more than five feet wide. The tides rose over it and the waves washed against it continually, but it gave a perfectly safe perch to our little boats. Above, cliff seemed to pile over cliff, until in the high distance the rocks looked like the overlapping scales of ancient armour. They were at least eleven hundred feet high, their summits generally lost in fog and mist; and all the way up we seemed to see the birds whose home is among their clefts. The nests were thickest on the shelves some fifty yards above the water; but both lumme and tridactyl gulls filled the entire air with glimmering specks, cawing and screeching with an incessant clamour.

CHAPTER
LIX.
Resting
under the
cliffs.



PROVIDENCE HALT.

To soften the scene, a natural bridge opened on our right hand into a little valley cove, green with mosses, and beyond and above it, cold and white the glacier.

CHAPTER

LIX.

Form of
the glacier.

This glacier was about seven miles across at its "debouche;" it sloped gradually upward for some five miles back, and then, following the irregularities of its rocky sub-structure, suddenly became a steep crevassed hill, ascending in abrupt terraces. Then came two intervals of less rugged ice, from which the glacier passed into the great *mer de glace*.

View of
the great
frozen
ocean.

On ascending a high craggy hill to the northward, I had a sublime prospect of this great frozen ocean, which seems to form the continental axis of Greenland,—a vast undulating plain of purple-tinted ice, studded with islands, and absolutely gemming the horizon with the varied glitter of sun-tipped crystal.

The discharge of water from the lower surface of the glacier exceeded that of any of the northern glaciers except that of Humboldt and the one near Etah. One torrent on the side nearest me overran the ice-foot from two to five feet in depth, and spread itself upon the floes for several hundred yards; and another, finding its outlet near the summit of the glacier, broke over the rocks, and poured in cataracts upon the beach below.

Vegeta-
tion.

The ranunculus, saxifrages, chickweeds, abundant mosses, and Arctic grasses, flourished near the level of the first talus of the glacier: the stone crops I found some two hundred feet higher. The thermometer was at 90° in the sun; in the shade at 38°.

Animal
life.

I have tried to describe the natural features of the scene, but I have omitted that which was its most valued characteristic. It abounded in life. The lumme, nearly as large as canvas-backs, and, as we thought, altogether sweeter and more juicy; their eggs, well known as delicacies on the Labrador coast; the cochlearia, growing superbly on the guano-coated surface;—all of them in endless abundance:—imagine such a combination of charms for scurvy-broken, hunger-stricken men.

Vain at-
tempts to
find fuel.

I could not allow the fuel for a fire; our slush and tallow was reduced to very little more than a hundred pounds. The more curious in that art which has dignified the memory of Lucullus, and may do as much for Soyer, made experiments upon the organic matters within their reach,—the dried nests of the kittiwake, the sods of poa, the heavy mosses, and the fatty skins of the birds around us. But they would none of them burn; and the most fastidious consoled himself at last with the doubt whether heat, though concentrating flavour, might not impair some other excel-

lence.
meal-
table
It
full of
myself
preme
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to side

lence. We limited ourselves to an average of a bird a-piece per meal,—of choice, not of necessity,—and renewed the zest of the table with the best salad in the world—raw eggs and cochlearia.

CHAPTER
LIX.
Meagre
diet.

It was one glorious holiday, our week at Providence Halt, so full of refreshment and all-happy thoughts, that I never allowed myself to detract from it by acknowledging that it was other than premeditated. There were only two of the party who had looked out with me on the bleak ice-field ahead, and them I had pledged to silence.

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CHAPTER LX.

THE CRIMSON CLIFFS—THE ESQUIMAUX EDEN—DEPRESSION OF THE COAST
—INVENTORY—IMALIK—LOSING OUR WAY—AT THE RUE-RADDIES—THE
OPEN SEA—EFFECTS OF HUNGER—RESCUE OF THE FAITH.

CHAPTER LX. IT was the 18th of July before the aspects of the ice about us gave me the hope of progress. We had prepared ourselves for the new encounter with the sea and its trials by laying in a store of lumme; two hundred and fifty of which had been duly skinned, spread open, and dried on the rocks, as the *entremets* of our bread-dust and tallow.

Disaster at setting out. My journal tells of disaster in its record of our setting out. In launching the *Hope* from the frail and perishing ice-wharf on which we found our first refuge from the gale, she was precipitated into the sludge below, carrying away rail and bulwark, losing overboard our best shot-gun, Bonsall's favourite, and, worst of all, that universal favourite, our kettle,—soup-kettle, paste-kettle, tea-kettle, water-kettle, in one. I may mention before I pass, that the kettle found its substitute and successor in the remains of a tin can which a good aunt of mine had filled with ginger-nuts two years before, and which had long survived the condiments that once gave it dignity. "Such are the uses of adversity."

The crimson cliffs. Our descent to the coast followed the margin of the fast ice. After passing the Crimson Cliffs of Sir John Ross, it wore almost the dress of a holiday excursion,—a rude one perhaps, yet truly one in feeling. Our course, except where a protruding glacier interfered with it, was nearly parallel to the shore. The birds along it were rejoicing in the young summer, and when we halted it was upon some green-clothed cape near a stream of water from the ice-fields above. Our sportsmen would clamber up the cliffs and come back laden with little auks; great generous fires of turf, that cost nothing but the toil of gathering, blazed merrily; and our happy oarsmen, after a long day's work, made easy by the promise ahead, would stretch themselves in the sunshine and dream happily away till called to the morning wash and prayers.

We enjoyed it the more, for we all of us knew that it could not last. CHAPTER LX.



PASSING THE CRIMSON CLIFFS.

This coast must have been a favourite region at one time with the natives,—a sort of Esquimaux Eden. We seldom encamped without finding the ruins of their habitations, for the most part overgrown with lichens, and exhibiting every mark of antiquity. One of these, in latitude $76^{\circ} 20'$, was once, no doubt, an extensive village. Cairns for the safe deposit of meat stood in long lines, six or eight in a group; and the huts, built of large rocks, faced each other, as if disposed on a street or avenue.

The Esquimaux Eden.

The same reasoning which deduces the subsidence of the coast from the actual base of the Temple of Serapis, proves that the depression of the Greenland coast, which I had detected as far north as Upernavik, is also going on up here. Some of these huts were washed by the sea or torn away by the ice that had descended

Depression of the coast.

CHAPTER
LX.

with the tides. The turf, too, a representative of very ancient growth, was cut off even with the water's edge, giving sections two feet thick. I had not noticed before such unmistakable evidence of the depression of this coast: its converse elevation I had observed to the north of Wostenholme Sound. The axis of oscillation must be somewhere in the neighbourhood of latitude 77°.

Cape
York.

We reached Cape York on the 21st, after a tortuous but romantic travel through a misty atmosphere. Here the land-leads ceased, with the exception of some small and scarcely-practicable openings near the shore, which were evidently owing to the wind that prevailed for the time. Everything bore proof of the late development of the season. The red snow was a fortnight behind its time. A fast floe extended with numerous tongues far out to the south and east. The only question was between a new rest, for the shore ices to open, or a desertion of the coast and a trial of the open water to the west.

Stock of
provisions.

We sent off a detachment to see whether the Esquimaux might not be passing the summer at Episok, behind the glacier of Cape Imalik, and began an inventory of our stock on hand. I give the result:—

Dried lumme.....	195 birds.
Pork-slush.....	112 pounds.
Flour.....	50 "
Indian meal.....	50 "
Meat-biscuit.....	80 "
Bread.....	348 "

Six hundred and forty pounds of provision, all told, exclusive of our dried birds, or some thirty-six pounds a man. Tom Hickey found a turf, something like his native peat, which we thought might help to boil our kettle; and with the aid of this our fuel-account stood thus:—

Fuel
account.

Turf, for two boilings a day.....	7 days
Two sledge-runners.....	6 "
Spare oars, sledges, and an empty cask.....	4 "

Seventeen days in all; not counting, however, the *Red Boat* which would add something, and our emptied provision-bags, which might carry on the estimate to about three weeks.

The return of the party from Imalik gave us no reason to hesitate. The Esquimaux had not been there for several years. There were no birds in the neighbourhood.

I climbed the rocks a second time with Mr. McGary, and took a careful survey of the ice with my glass. The "fast," as the whalers call the immovable shore-ice, could be seen in a nearly unbroken sweep, passing by Bushnell's Island, and joining the coast not far from where I stood. The outside floes were large, and had evidently been not long broken; but it cheered my heart to see that there was one well-defined lead which followed the main floe until it lost itself to seaward.

CHAPTER
LX.
View from
the rocks.

I called my officers together, explained to them the motives which governed me, and prepared to re-embark. The boats were hauled up, examined carefully, and, as far as our means permitted, repaired. The *Red Eric* was stripped of her outfit and cargo, to be broken up for fuel when the occasion should come. A large beacon-cairn was built on an eminence, open to view from the south and west; and a red flannel shirt, spared with some reluctance, was hoisted as a pennant to draw attention to the spot. Here I deposited a succinct record of our condition and purposes, and then directed our course south by west into the ice-fields.

Prepara-
tions for
re-em-
barking.

By degrees the ice through which we were moving became more and more impacted; and it sometimes required all our ice-knowledge to determine whether a particular lead was practicable or not. The irregularities of the surface, broken by hummocks, and occasionally by larger masses, made it difficult to see far ahead; besides which, we were often embarrassed by the fogs. I was awakened one evening from a weary sleep in my fox-skins, to discover that we had fairly lost our way. The officer at the helm of the leading boat, misled by the irregular shape of a large iceberg that crossed his track, had lost the main lead some time before, and was steering shoreward far out of the true course. The little canal in which he had locked us was hardly two boats' lengths across, and lost itself not far off in a feeble zigzag both behind and before us: it was evidently closing, and we could not retreat.

Losing the
way.

Without apprising the men of our misadventure, I ordered the boats hauled up, and, under pretence of drying the clothing and stores, made a camp on the ice. A few hours after, the weather cleared enough for the first time to allow a view of the distance, and McGary and myself climbed a berg some three hundred feet high for the purpose. It was truly fearful: we were deep in the

A camp on
the ice.

CHAPTER
LX.A fearful
prospect.The
sledges
again.

recesses of the bay, surrounded on all sides by stupendous icebergs and tangled floe-pieces. My sturdy second officer, not naturally impressible, and long accustomed to the vicissitudes of whaling life, shed tears at the prospect.

There was but one thing to be done: cost what it might, we must harness our sledges again and retrace our way to the westward. One sledge had been already used for firewood; the *Red Eric*, to which it had belonged, was now cut up, and her light cedar planking laid upon the floor of the other boats; and we went to work with the rue-raddies as in the olden time. It was not till the third toilsome day was well spent that we reached the berg which had bewildered our helmsman. We hauled over its tongue, and joyously embarked again upon a free lead, with a fine breeze from the north.

Afloat once
more.

Our little squadron was now reduced to two boats. The land to the northward was no longer visible; and whenever I left the margin of the "fast" to avoid its deep sinuosities, I was obliged to trust entirely to the compass. We had at least eight days' allowance of fuel on board; but our provisions were running very low, and we met few birds, and failed to secure any larger game. We saw several large seals upon the ice, but they were too watchful for us; and on two occasions we came upon the walrus sleeping,—once within actual lance-thrust; but the animal charged in the teeth of his assailant and made good his retreat.

Reckoning
supplies.

On the 28th I instituted a quiet review of the state of things before us. Our draft on the stores we had laid in at Providence Halt had been limited for some days to three raw eggs and two breasts of birds a day; but we had a small ration of bread-dust besides; and when we halted, as we did regularly for meals, our fuel allowed us to indulge lavishly in the great panacea of Arctic travel, tea. The men's strength was waning under this restricted diet; but a careful reckoning up of our remaining supplies proved to me now that even this was more than we could afford ourselves without an undue reliance on the fortunes of the hunt. Our next land was to be Cape Shackleton, one of the most prolific bird-colonies of the coast, which we were all looking to, much as sailors nearing home in their boats after disaster and short allowance at sea. But, meting out our stores through the number of days that must elapse before we could expect to share its hospitable welcome,

I found that five ounces of bread-dust, four of tallow, and three of bird-meat, must from this time form our daily ration.

CHAPTER
LX.

So far we had generally coasted the fast ice : it had given us an occasional resting-place and refuge, and we were able sometimes to re-inforce our stores of provisions by our guns. But it made our progress tediously slow, and our stock of small-shot was so nearly exhausted that I was convinced our safety depended on an increase of speed. I determined to try the more open sea.

The open
sea.

For the first two days the experiment was a failure. We were surrounded by heavy fogs ; a south-west wind brought the outside pack upon us and obliged us to haul up on the drifting ice. We were thus carried to the northward, and lost about twenty miles. My party, much overworked, felt despondingly the want of the protection of the land-floes.

Nevertheless, I held to my purpose, steering S.S.W. as nearly as the leads would admit, and looking constantly for the thinning out of the pack that hangs around the western water.

Although the low diet and exposure to wet had again reduced our party, there was no apparent relaxation of energy ; and it was not until some days later that I found their strength seriously giving way.

It is a little curious that the effect of a short allowance of food does not show itself in hunger. The first symptom is a loss of power, often so imperceptibly brought on that it becomes evident only by an accident. I well remember our look of blank amazement as, one day, the order being given to haul the *Hope* over a tongue of ice, we found that she would not budge. At first I thought it was owing to the wetness of the snow-covered surface in which her runners were ; but, as there was a heavy gale blowing outside, and I was extremely anxious to get her on to a larger floe to prevent being drifted off, I lightened her cargo and set both crews upon her. In the land of promise off Crimson Cliffs, such a force would have trundled her like a wheelbarrow : we could almost have borne her upon our backs. Now, with incessant labour and standing-hauls, she moved at a snail's pace.

Effect of a
short al-
lowance
of food.

The *Faith* was left behind, and barely escaped destruction. The outside pressure cleft the floe asunder, and we saw our best boat, with all our stores, drifting rapidly away from us. The sight produced an almost hysterical impression upon our party. Two days

The *Faith*
drifted
away.

CHAPTER

LX.

of want of bread, I am sure, would have destroyed us ; and we had now left us but eight pounds of shot in all. To launch the *Hope* again, and rescue her comrade or share her fortunes, would have been the instinct of other circumstances ; but it was out of the question now. Happily, before we had time to ponder our loss, a flat cake of ice eddied round near the floe we were upon ; M'Gary and myself sprang to it at the moment, and succeeded in floating it across the chasm in time to secure her. The rest of the crew rejoined her by only scrambling over the crushed ice as we brought her in at the hummock-lines.

CHAPTER LXI.

THE SEAL! THE SEAL!—THE FESTIVAL—TERRA FIRMA—PAUL ZACHARIAS
—THE FRAULEIN FLAISCHER—THE NEWS—AT THE SETTLEMENTS—THE
WELCOME.

THINGS grew worse and worse with us: the old difficulty of breathing came back again, and our feet swelled to such an extent that we were obliged to cut open our canvas boots. But the symptom which gave me most uneasiness was our inability to sleep. A form of low fever which hung by us when at work had been kept down by the thoroughness of our daily rest; all my hopes of escape were in the refreshing influences of the halt.

CHAPTER
LXI.
Illness and
suffering.

It must be remembered that we were now in the open bay, in the full line of the great ice-drift to the Atlantic, and in boats so frail and unseaworthy as to require constant baling to keep them afloat.

It was at this crisis of our fortunes that we saw a large seal floating—as is the custom of these animals—on a small patch of ice, and seemingly asleep. It was an ussuk, and so large that I at first mistook it for a walrus. Signal was made for the *Hope* to follow astern, and, trembling with anxiety, we prepared to crawl down upon him.

A seal in
sight.

Petersen, with the large English rifle, was stationed in the bow, and stockings were drawn over the oars as mufflers. As we neared the animal, our excitement became so intense that the men could hardly keep stroke. I had a set of signals for such occasions, which spared us the noise of the voice; and when about three hundred yards off, the oars were taken in, and we moved on in deep silence with a single scull astern.

Intense
excite-
ment.

He was not asleep, for he reared his head when we were almost within rifle-shot; and to this day I can remember the hard, careworn, almost despairing expression of the men's thin faces as they saw him move: their lives depended on his capture.

Life at
stake.

I depressed my hand nervously, as a signal for Petersen to fire. M'Gary hung upon his oar, and the boat, slowly but noiselessly

CHAPTER
LXI.Paralysed
by anxiety.

sagging ahead, seemed to me without certain range. Looking at Petersen, I saw that the poor fellow was paralyzed by his anxiety, trying vainly to obtain a rest for his gun against the cut-water of the boat. The seal rose on his four-flippers, gazed at us for a moment with frightened curiosity, and coiled himself for a plunge. At that instant, simultaneously with the crack of our rifle, he relaxed his long length on the ice, and, at the very brink of the water, his head fell helpless to one side.

Seizing
the prize.

I would have ordered another shot, but no discipline could have controlled the men. With a wild yell, each vociferating according to his own impulse, they urged both boats upon the floes. A crowd of hands seized the seal and bore him up to safer ice. The men seemed half crazy; I had not realized how much we were reduced by absolute famine. They ran over the floe, crying and laughing, and brandishing their knives. It was not five minutes before every man was sucking his bloody fingers or mouthing long strips of raw blubber.

The feast.

Not an ounce of this seal was lost. The intestines found their way into the soup-kettles without any observance of the preliminary home-processes. The cartilaginous parts of the fore-flippers were cut off in the *mêlée*, and passed round to be chewed upon; and even the liver, warm and raw as it was, bade fair to be eaten before it had seen the pot. That night, on the large halting-floe, to which, in contempt of the dangers of drifting, we happy men had hauled our boats, two entire planks of the *Red Eric* were devoted to a grand cooking-fire, and we enjoyed a rare and savage feast.

The poor
dogs
saved.

This was our last experience of the disagreeable effects of hunger. In the words of George Stephenson, "The charm was broken, and the dogs were safe." The dogs I have said little about, for none of us liked to think of them. The poor creatures, Toodla and Whitey, had been taken with us as last resources against starvation. They were, as M'Gary worded it, "meat on the hoof," and "able to carry their own fat over the floes." Once, near Weary Man's Rest, I had been on the point of killing them; but they had been the leaders of our winter's team, and we could not bear the sacrifice.

I need not detail our journey any further. Within a day or two we shot another seal, and from that time forward had a full supply of food.

On the 1st of August we sighted the Devil's Thumb, and were again among the familiar localities of the whalers' battling-ground. The bay was quite open, and we had been making easting for two days before. We were soon among the Duck Islands, and, passing to the south of Cape Shackleton, prepared to land.

CHAPTER
LXI.
The Duck
Islands.

"Terra firma! Terra firma!" How very pleasant it was to look upon, and with what a tingle of excited thankfulness we drew near it! A little time to seek a cove among the wrinkled hills, a little time to exchange congratulations, and then our battered boats were hauled high and dry upon the rocks, and our party, with hearts full of our deliverance, lay down to rest.

On "Terra
firma."

And now, with the apparent certainty of reaching our homes, came that nervous apprehension which follows upon hope long deferred. I could not trust myself to take the outside passage, but timidly sought the quiet-water channels running deep into the archipelago which forms a sort of labyrinth along the coast.

Thus it was that at one of our sleeping-halts upon the rocks—for we still adhered to the old routine—Petersen awoke me with a story. He had just seen and recognised a native, who, in his frail kayak, was evidently seeking eider-down among the islands. The man had once been an inmate of his family. "Paul Zacharias, don't you know me? I'm Carl Petersen!" "No," said the man; "his wife says he's dead;" and, with a stolid expression of wonder, he stared for a moment at the long beard that loomed at him through the fog, and paddled away with all the energy of fright.

Paul
Zacharias.

Two days after this, a mist had settled down upon the islands which embayed us, and when it lifted we found ourselves rowing, in lazy time, under the shadow of Karkamoot. Just then a familiar sound came to us over the water. We had often listened to the screeching of the gulls or the bark of the fox, and mistaken it for the "Huk" of the Esquimaux; but this had about it an inflection not to be mistaken, for it died away in the familiar cadence of a "halloo."

A familiar
sound.

"Listen, Petersen! oars, men!" "What is it?"—and he listened quietly at first, and then, trembling, said, in a half whisper, "Dannemarkers!"

I remember this, the first tone of Christian voice which had greeted our return to the world. How we all stood up and peered into the distant nooks; and how the cry came to us again, just as

A joyful
greeting

CHAPTER
LXI.

having seen nothing, we were doubting whether the whole was not a dream; and then how, with long sweeps, the white ash cracking under the spring of the rowers, we stood for the cape that the sound proceeded from, and how nervously we scanned the green spots which our experience, grown now into instinct, told us would be the likely camping-ground of wayfarers.

A vessel in
sight.

By-and-by—for we must have been pulling a good half hour—the single mast of a small shallop showed itself; and Petersen, who had been very quiet and grave, burst out into an incoherent fit of crying, only relieved by broken exclamations of mingled Danish and English. “’Tis the Upernavik oil-boat! The Fraulein Flaischer! Carlie Mossyn, the assistant cooper, must be on his road to Kingatok for blubber. The *Mariane* (the one annual ship) has come, and Carlie Mossyn—” and here he did it all over again, gulping down his words and wringing his hands.

Carlie
Mossyn.

It was Carlie Mossyn, sure enough. The quiet routine of a Danish settlement is the same year after year, and Petersen had hit upon the exact state of things. The *Mariane* was at Proven, and Carlie Mossyn had come up in the Fraulein Flaischer to get the year’s supply of blubber from Kingatok.

The first
news.

Here we first got our cloudy vague idea of what had passed in the big world during our absence. The friction of its fierce rotation had not much disturbed this little outpost of civilization, and we thought it a sort of blunder as he told us that France and England were leagued with the Mussulman against the Greek Church. He was a good Lutheran, this assistant cooper, and all news with him had a theological complexion.

“What of America, eh, Petersen?”—and we all looked, waiting for him to interpret the answer.

“America?” said Carlie; “we don’t know much of that country here, for they have no whalers on the coast; but a steamer and a barque passed up a fortnight ago, and have gone out into the ice to seek your party.”

How gently all the lore of this man oozed out of him! he seemed an oracle, as, with hot-tingling fingers pressed against the gunwale of the boat, we listened to his words. “Sebastopol ain’t taken.” Where and what was Sebastopol?

But “Sir John Franklin?” There we were at home again,—our own delusive little speciality rose uppermost. Franklin’s

party, or traces of the dead which represented it, had been found nearly a thousand miles to the south of where we had been searching for them. He knew it; for the priest (Pastor Kraag) had a German newspaper which told all about it. And so we "out oars" again, and rowed into the fog.

CHAPTER
LXI.

Another sleeping-halt has passed, and we have all washed clean at the fresh-water basins and furbished up our ragged furs and woollens. Kasarsoak, the snow top of Sanderson's Hope, shows itself above the mists, and we hear the yelling of the dogs. Petersen had been foreman of the settlement, and he calls my attention, with a sort of pride, to the tolling of the workmen's bell. It is six o'clock. We are nearing the end of our trials. Can it be a dream?—

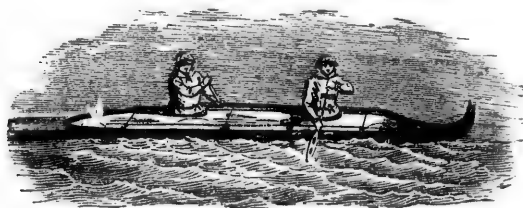
Preparing
to land.

We hugged the land by the big harbour, turned the corner by the old brew-house, and in the midst of a crowd of children, hauled our boats for the last time upon the rocks.

The boats
hauled up

For eighty-four days we had lived in the open air. Our habits were hard and weather-worn. We could not remain within the four walls of a house without a distressing sense of suffocation. But we drank coffee that night before many a hospitable threshold, and listened again and again to the hymn of welcome, which, sung by many voices, greeted our deliverance.

A hymn of
welcome.



GREENLANDER'S CANOE.

CONCLUSION.

CONCLU-
SION.Kindly re-
ceived.

Bellot.

Needful
rest.Leave
Uper-
navik.

WE received all manner of kindness from the Danes of Upernavik. The residents of this distant settlement are dependent for their supplies on the annual trading-ship of the colonies, and they of course could not minister to our many necessities without much personal inconvenience. But they fitted up a loft for our reception, and shared their stores with us in liberal Christian charity.

They gave us many details of the expeditions in search of Sir John Franklin, and added the painful news that my gallant friend and comrade, Bellot, had perished in a second crusade to save him. We knew each other by many common sympathies: I had divided with him the hazards of mutual rescue among the ice-fields; and his last letter to me, just before I left New York, promised me the hope that we were to meet again in Baffin's Bay, and that he would unite himself with our party as a volunteer. The French service never lost a more chivalrous spirit.

The Danish vessel was not ready for her homeward journey till the 4th of September; but the interval was well spent in regaining health and gradually accustoming ourselves to in-door life and habits. It is a fact, which the physiologist will not find it difficult to reconcile with established theories, that we were all more prostrated by the repose and comfort of our new condition than we had been by nearly three months of constant exposure and effort.

On the 6th I left Upernavik, with all our party, in the *Mariane*, a stanch but antiquated little barque, under the command of Captain Ammondson, a fine representative of the true-hearted and skilful seamen of his nation, who promised to drop us at the Shetland Islands. Our little boat, the *Faith*, which was regarded by all of us as a precious relic, took passage along with us. Except the furs on our backs, and the documents that recorded our labours and our trials, it was all we brought back of the *Advance* and her fortunes.

On the 11th we arrived at Godhavn, the inspectorate of North

Greenland, and had a characteristic welcome from my excellent friend, Mr. Olrik. The *Mariane* had stopped only to discharge a few stores and receive her papers of clearance; but her departure was held back to the latest moment, in hopes of receiving news of Captain Hartstene's squadron, which had not been heard of since the 21st of July.

CONCLU-
SION.
Godhavn.

We were upon the eve of setting out, however, when the lookout man at the hill-top announced a steamer in the distance. It drew near, with a barque in tow, and we soon recognised the stars and stripes of our own country. The *Faith* was lowered for the last time into the water, and the little flag which had floated so near the poles of both hemispheres opened once more to the breeze. With Brooks at the tiller and Mr. Olrik at my side, followed by all the boats of the settlement, we went out to meet them.

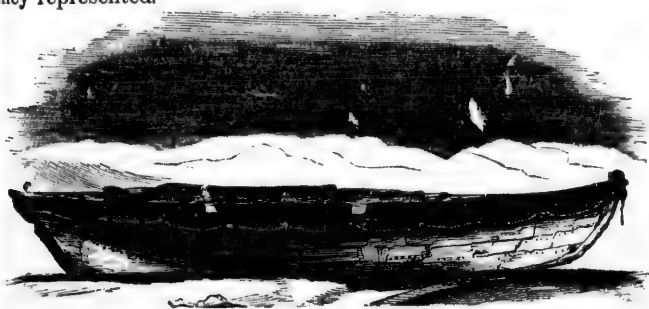
A steamer
in sight.

Not even after the death of the usuk did our men lay to their oars more heartily. We neared the squadron and the gallant men that had come out to seek us; we could see the scars which their own ice-battles had impressed on the vessels; we knew the gold lace of the officers' cap-bands, and discerned the groups who, glass in hand, were evidently regarding us.

Rowing to
the
steamer.

Presently we were alongside. An officer, whom I shall ever remember as a cherished friend, Captain Hartstene, hailed a little man in a ragged flannel shirt, "Is that Dr. Kane?" and with the "Yes!" that followed, the rigging was manned by our countrymen, and cheers welcomed us back to the social world of love which they represented.

Cheers of
welcome.



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APPENDIX.

No. I.

Instructions of the Secretary of the Navy to Passed Assistant Surgeon Kane.

NAVY DEPARTMENT, November 27, 1852.

SIR,—Lady Franklin having urged you to undertake a search for her husband, Sir John Franklin, and his companions, and a vessel, the *Advance*, having been placed at your disposition by Mr. Grinnell, you are hereby assigned to special duty for the purpose of conducting an overland journey from the upper waters of Baffin's Bay to the shores of the Polar Seas.

Relying upon your zeal and discretion, the Department send you forth upon an undertaking which will be attended with great peril and exposure. Trusting that you will be sustained by the laudable object in view, and wishing you success and a safe return to your friends, I am, respectfully, your obedient servant,

JOHN P. KENNEDY.

Passed Assistant Surgeon E. K. KANE,
United States Navy, Philadelphia.

NAVY DEPARTMENT, February, 9, 1853.

SIR,—In connection with the special duty assigned to you by the order of this Department bearing date November 27, 1852, your attention is invited to objects of scientific inquiry; particularly to such as relate to the existence of an open Polar Sea, terrestrial magnetism, general meteorology, and subjects of importance in connection with natural history.

You will transmit to the Department, when opportunities offer, reports of your progress and the results of your search, and, on your return to the United States, a full and detailed narrative of the incidents and discoveries of your exploration by land and sea, as matters of the scientific observations herein referred to.

Repeating my best wishes for your success, I am, very respectfully, &c.

JOHN P. KENNEDY.

Passed Assistant Surgeon E. K. KANE,
United States Navy, New York.

No. II.

Preliminary Report of Passed Assistant Surgeon Kane to the Secretary of the Navy.

Hon. JAMES C. DOBBIN, *Secretary of the Navy.*

SIR,—The expedition to which I was assigned by orders from the Department, under date the 27th of November, 1852, left New York in the brig *Advance*, one hundred and twenty tons burden, on the 30th of May following. Our company consisted of eighteen persons in all; of whom ten were regularly attached to the naval service, the others being engaged by private liberality.

Our destination was to the highest penetrable point of Baffin's Bay, from which, according to instructions from the Department, we were to attempt a search for the missing vessels of Sir John Franklin. This region was then entirely unexplored, and it was selected on that account.

The copies which I annex of my letters heretofore addressed to the Department indicate my course up to the time of leaving Upernavik, in latitude 72° 47' N. It will be seen from them that I engaged at that point an Esquimaux hunter and an interpreter, deeming their aid essential to the success of our expedition. I had also purchased supplies of fresh meat and fish, which were carefully dried and set aside to meet emergencies.

On reaching Melville Bay I found the shore ices so decayed that I did not deem it advisable to attempt the usual passage along the fast floes of the land, but stood directly to the northward and westward, as indicated by my log, until I met the Middle Pack. Here we headed nearly direct for Cape York, and succeeded in crossing the bay without injury in ten days after first encountering the ice. On the 7th of August we reached the headland of Sir Thomas Smith's Sound, and passed the highest point attained by our predecessor, Captain Inglefield, R. N.

So far our observations accorded completely with the experience of this gallant officer in the summer of 1852. A fresh breeze, with a swell setting in from the southward and westward; marks upon the rocks indicating regular tides; no ice visible from aloft, and all the signs of continuous open water.

As we advanced, however, a belt of heavy stream ice was seen,—an evident precursor of drift; and a little afterward it became evident that the channel to the northward was obstructed by a drifting pack.

We were still too far to the south to carry out the views I had formed of our purposed search, and it became my duty, therefore, to attempt the penetration of this ice. Before doing this, I selected an appropriate inlet for a provision-depôt, and buried there a supply of beef, pork, and bread; at the same place we deposited our Francis's life-boat, covering it carefully with wet sand, and overlaying the frozen mass with stones and moss. We afterward found that the Esquimaux had hunted around this inlet; but the *cache*, which we had thus secured as our own resort in case of emergency, escaped detection.

No one having yet visited this coast, I landed on the most prominent western headland of a group of small islands,—the Littleton islands of Inglefield,—and erected there a flagstaff and beacon; near this beacon, according to preconcerted arrangement, we deposited official despatches and our private letters of farewell.

My first design in entering the pack was to force a passage to the north; but, after reaching latitude $73^{\circ} 45' N.$, we found the ice hugging the American shore, and extending in a drifting mass completely across the channel. This ice gradually bore down upon us, and we were forced to seek the comparatively open spaces of the Greenland coast. Still, we should have inevitably been beset and swept to the south, but for a small landlocked bay under whose cliffs we found a temporary asylum. We named it Refuge Inlet: it carries fifty fathoms of water within a biscuit-toss of its northern headland, and, but for a glacier which occupies its inner curve, would prove an eligible winter harbour.

We were detained in this helpless situation three valuable days, the pack outside hardly admitting the passage of a boat. But, on the 13th, fearing lest the rapidly advancing cold might prevent our penetrating further, we warped out into the drift, and fastened to a grounded berg.

That the Department may correctly apprehend our subsequent movements, it is necessary to describe some features peculiar to our position. The coast trended to the N.N.E. It was metamorphic in structure, rising in abrupt precipitous cliffs of basaltic greenstone from eight hundred to twelve hundred feet in perpendicular height. The shore at the base of this wall was invested by a permanent belt of ice, measuring from three to forty yards in width, with a mean summer thickness of eighteen feet. The ice clung to the rocks with extreme tenacity; and, unlike similar formations to the south, it had resisted the thawing influences of summer. The tidal currents had worn its seaward face into a gnarled mural escarpment, against which the floes broke with splendid displays of force; but it still preserved an upper surface comparatively level, and adapted as a sort of highway for further travel. The drifting ice or pack outside of it was utterly impenetrable; many bergs recently discharged were driving backward and forward with the tides; and thus, pressing upon the ice of the floes, had raised up hills from sixty to seventy feet high. The mean rise and fall of the tide was twelve feet, and its rate of motion two and a half knots an hour.

In this state of things, having no alternative but either to advance or to discontinue the search, I determined to take advantage of a small interspace which occurred at certain stages of the tide between the main pack and the coast, and, if possible, press through it. I was confirmed in this purpose by my knowledge of the extreme strength of the *Advance*, and my confidence in the spirit and fidelity of my comrades. The effort occupied us until the 1st of September. It was attended by the usual dangers of ice penetration. We were on our beam ends whenever the receding tides left us in deficient soundings; and on two of such occasions it was impossible to secure our stoves so as to prevent the brig from taking fire. We reached latitude $73^{\circ} 43' N.$ on the 29th of August, having lost a part of our starboard bulwarks, a quarter boat, our jib-boom, our best bow anchor, and about six hundred fathoms of hawser; but with our brig in all essentials uninjured.

We were now retarded by the rapid advance of winter: the young ice was forming with such rapidity that it became evident that we must soon be frozen in. At this juncture my officers addressed to me written opinions in favour of a return to a more southern harbour; but, as such a step would have cost us our dearly purchased progress and removed us from the field of our intended observations, I could not accede to their views. I determined, therefore, to start on foot with a party of observation, to seek a spot which might be eligible as a starting point for our future travel, and, if such a one were found, to enter at once upon the full duties of search.

This step determined on, the command of the brig was committed to Mr. Ohlsen, and I started on the 29th of August with a detachment, carrying a whale boat and sledge. The ice soon checked the passage of our boat; but I left her and proceeded with a small sledge along the ledge of ice which, under the name of "ice-foot," I have before described as clinging to the shore.

We were obliged, of course, to follow all the indentations of the coast, and our way was often completely obstructed by the discharge of rocks from the adjacent cliffs. In crossing a glacier we came near losing our party, and were finally compelled to abandon the sledge and continue our journey on foot. We succeeded, however, in completing our work, and reached a projecting cape, from which, at an elevation of eleven hundred feet, I commanded a prospect of the ice to the north and west as high as latitude 80° N. A black ridge running nearly due north, which we found afterward to be a glacier, terminated our view along the Greenland coast to the eastward. Numerous icebergs were crowded in masses throughout the axis of the channel; and, as far as our vision extended, the entire surface was a frozen sea. The island named Louis Napoleon on the charts of Captain Inglefield does not exist. The resemblance of ice to land will readily explain the misapprehension.

The result of this journey, although not cheering, confirmed me in my intention of wintering in the actual position of the brig; and I proceeded, immediately on our return, to organize parties for the fall, with a view to the establishment of provision depôts to facilitate the further researches of the spring. In selecting sites for these and the attendant travel, our parties passed over more than eight hundred miles. The coast of Greenland was traced one hundred and twenty-five miles to the north and east, and three caches were established at favourable points. The largest of these (No. III. of chart) contained eight hundred pounds of pemmican; it was located upon an island in latitude $79^{\circ} 12' 6''$ N., longitude $65^{\circ} 25'$ W., by Messrs. M'Gary and Bonsall. These operations were continued until the 20th of November, when the darkness arrested them.

Our brig had been frozen in since the 10th of September. We had selected a harbour near a group of rocky islets in the south-eastern curve of the bay, where we could establish our observatory, and had facilities for procuring water and for daily exercise. We were secure, too, against probable disturbance during the winter, and were sufficiently within the tidal influences to give us a hope of liberation in the spring.

As we were about to winter higher north than any previous expedition, and, besides a probable excess of cold, were about to experience a longer deprivation of solar light, the arrangements for the interior were studied carefully.

The deck was housed in with boards and calked with oakum. A system of warmth and ventilation was established: our permanent lamps were used with chimneys, to prevent the accumulation of smoke; cooking, ice-melting, and washing arrangements were minutely cared for; the dogs were kennelled in squads, and they were allowed the alternate use of snow houses and of the brig, as their condition might require. Our domestic system was organized with the most exact attention to cleanliness, exercise, recreation, and withal to fixed routine.

During the winter which followed, the sun was one hundred and twenty days below the horizon; and owing to a range of hills toward our southern meridian, the maximum darkness was not relieved by apparent twilight even at noon-day.

The atmospheric temperatures were lower than any that had been recorded by others before us. We had adopted every precaution to secure accuracy in these

observations, and the indications of our numerous thermometers—alcoholic, ethereal, and mercurial—were registered hourly.

From them it appears that the mean annual temperature of Rensselaer Harbour, as we named our winter home, is lower than that of Melville Island, as recorded by Parry, by two degrees. In certain sheltered positions, the process of freezing was unintermitted for any consecutive twenty-four hours throughout the year.

The lowest temperature was observed in February, when the mean of eight instruments indicated minus 70° Fahrenheit. Chloroform froze; the essential oils of sassafras, juniper, cubeb, and winter green, were resolved into mixed solid and liquid; and on the morning of February 24 we witnessed chlorine ether congealed for the first time by a natural temperature.

In the early part of this winter I erected an astronomical observatory, and mounted our "transit" and theodolite upon pedestals of stone cemented by ice. Great care was taken by Mr. Sontag, the astronomer to the expedition, in determining our geographical position. The results for the determination of longitude, as based upon moon culminations, are in every respect satisfactory; they are corroborated by occultations of planets and the late solar eclipse of May 1855. An occultation of Saturn simultaneously observed by Mr. Sontag and myself, at temperatures of minus 60° and 53°, differed but two seconds. This is the lowest temperature at which such an observation has ever been taken.

The position of our observatory may be stated as in latitude 78° 37' N., longitude 70° 40' 6" W.

A room artificially heated was attached to the observatory as a magnetic station. The observations were both absolute and relative, and were sustained by a corps of volunteers among the officers.

A strong tendency to tonic spasm, probably induced by the lengthened cold and darkness, was the chief trial of our party. General disease was readily controlled by a careful hygiene; and the unrelenting and intelligent exertions of Dr. I. I. Hayes, the surgeon of the expedition, kept the scurvy in complete subjugation.

But this anomalous form of spasmodic disease was encountered with difficulty. It extended to our dogs, assuming the aspect of tetanus: in spite of every effort, no less than fifty-seven perished, many of them with symptoms not unlike those of hydrophobia.

The loss of these animals interfered seriously with my original scheme of search. They had been collected at various points of the coast of Greenland, and had been trained for their office with extreme care and labour. I had contemplated employing them in following the coast, and with this view had devoted the labours of the fall to the organization of a chain of dépôts. Now, however, a new system of operations was to be established, with different appliances. New sledges were to be built, and cooking-utensils and field-equipments provided, suited to larger parties and of more portable character. The latter period of darkness was entirely occupied with these new preparations.

Our party was unhappily too small for an extended system of field-operations by unassisted human labour; and the only remaining hope of continuing the search was to be found in a passage through or over the great ice-fields to the north,—an effort the success of which was rendered very doubtful by the crowded bergs and distorted ice of this frozen area. With this object I organized a party of our strongest men (all volunteers) under my personal charge, and sent an advanced corps under Mr. Brooks, the energetic first officer of the expedition, to place a relief-cargo of provisions at ten days' journey from the brig.

On the 27th of March, the ninth day of their absence, a heavy gale from the north-north-east broke upon this party. The thermometer fell to 57° below zero; and the ice-ridges (hummock-lines) were so obstructed by snow-drift that they could not deposit their stores beyond fifty miles from the brig. Four of the most valuable members of the party, Messrs. Brooks and Wilson, Jefferson Baker, and Peter Schubert, were frozen at the extremities; and, a single man being left to attend them, the others returned to the brig in a state of extreme exhaustion. The name of the brave fellow who remained with his comrades was Thomas Hickey, an Irishman.

The main company under my own command started at once for the fies; with but little hope of rescuing our comrades; Mr. Ohlsen, one of the returned party, volunteering to guide us. He was sewed up in furs, and strapped upon a small sledge, which we dragged after us; but symptoms of mental disturbance rendered his heroism unavailing, and, but for striking the trail of the party, we must all of us have perished.

On this occasion I was deeply touched by the confidence of the disabled men in the certainty of their relief. Although they were nearly concealed by snow-drift, and dependent for warmth upon their sleeping-bags, they had patiently and hopefully awaited our arrival. The discovery of a small canvas tent in the midst of these immense plains of ice I must remember as providential.

I mention gratefully the endurance and self-denial of my comrades upon this fearful march. They had been eighty-one out of eighty-four hours without sleep, and had halted for the purpose of melting ice for drink. The tendency to sleep could only be overcome by mechanical violence; and when at last we got back to the brig, still dragging the wounded men instinctively behind us, there was not one whose mind was found to be unimpaired.

This disastrous effort cost us two valuable lives, Jefferson Baker and Peter Schubert. The first of these was a native of Delaware County, Pennsylvania, a trustworthy and faithful follower; he died of locked-jaw, thirty-six hours after his return to the brig. The other was cook to the expedition, and a volunteer upon the duty which caused his death. Our little party had throughout, from the nature of the service, been in close relations with one another, and these men are remembered by us all with sympathy and respect.

As soon after this as the health of our company could justify, I set out with my original party to renew the attempt from a higher point on the Greenland coast, carrying with me an India-rubber boat. This journey was undertaken in the latter part of April, and continued into May. It was followed by others, which extended the search, almost without intermission, until the 10th of July. These journeys may be thus summed up:—

March.....	Mr. Brooks and Dr. Kane.
April, May	Dr. Kane, Messrs. M'Gary and Bonsall.
June.....	Dr. Hayes and William Godfrey.
June, July.....	William Morton, and Hans Heindrick, our native hunter.

The arrival of the Esquimaux in April enabled us to add four dogs to the three that remained of our original stock, and thus to equip a slender team. The value of these animals for Arctic ice-travel can hardly be overestimated. The earlier journeys of March, April, and May, proved incomparably more arduous and exposing than those performed with dogs, while their results were entirely disproportionate to the labour they cost us. It was invariably the case that

the entire party, on its return from the field, passed at once upon the sick-list.

Out of nearly three thousand miles of travel, no less than eleven hundred were made by the dog-sledge; and during the fall, winter, and spring of the ensuing year (1854-55) I made, in person, no less than fourteen hundred miles with a single team.

Setting out from our winter quarters, three expeditions effected the passage of the bay:—1. To the north, with Messrs. M'Gary and Fensall, along the base of a great glacier which issued from the coast of Greenland in latitude $79^{\circ} 12'$. A copy of this glacier, as surveyed by me in 1855, accompanies this report. 2. To the south-west, by Dr. Hayes and William Godfrey. 3. To the north-west, and along the shores of a new channel, by W. Morton and our Esquimaux hunter, Hans. The original reports of these journeys, with my own observations, are now under seal and subject to the orders of the Department. I give only a summary of results, referring for particulars to the track chart projected on the spot from the original field-notes, which I have the honour to transmit with this report.

Greenland reaches its furthest western point at Cape Alexander, in the neighbourhood of latitude $78^{\circ} 10'$ N. and after passing longitude 70° W. of Greenwich, trends nearly due east and west, (E. 20° N.) This northern face of Greenland is broken by two large bays, at the base of which are numerous granitoid islands, which, as you approach longitude 65° W., assume the form of an archipelago. Fifteen islands were surveyed and located here. The aspect of the coast is imposing, abutting upon the water-line in headlands from eight hundred to fourteen hundred feet high, and one range of precipice presenting an unbroken wall of forty-five miles in length. Its geological structure is of the older red sandstones and silurian limestones, overlying a primary basis of massive syenites. The sandstones to the south of 78° seem to form the floor of the bay. They are in series, with intercalated greenstones and other ejected plutonic rocks, and form the chief girders of the coast. Upon this and collateral subjects I shall, with your permission, address a special report to the Department.

The further progress of our parties towards the Atlantic was arrested by a great glacier, which issued in latitude $79^{\circ} 12'$ N., longitude $64^{\circ} 20'$ W., and ran directly north. This forms an insuperable barrier to exploration in this direction: it is continuous with the *mer de glace* of interior Greenland, and is the largest true glacier known to exist. Its great mass adapts itself to the configuration of the basis-country which it overlies. Its escarpment abutting upon the water presents a perpendicular face varying from three to five hundred feet in height.

The lines of crevasse and fracture are on an unexampled scale of interest. The bergs, which are ejected in lines, arrange themselves in a sort of escalade, which confers a character of great sublimity upon the landscape.

It was followed along its base, and traced into a new and northern land, trending far to the west. This land I have named *Washington*. The large bay which separates it from the coast of Greenland and the glacier I have described bears on my chart the name of our liberal countryman, Mr. Peabody.

The coasts of this new territory, adjoining Peabody Bay, have been accurately delineated by two parties, whose results correspond. Its south-western cape is in latitude $80^{\circ} 20'$ N., by observation with artificial horizon; its longitude, by chronometer and bearings, $66^{\circ} 42'$ W. of Greenwich. The cape was doubled by William Morton and our Esquimaux, with a team of dogs, and the land to the

north traced until they reached the large indentation named Constitution Bay. The whole of this line was washed by open water, extending in an iceless channel to the opposite shores on the west. This western land I have inscribed with the name of Henry Grinnell.

The course of this channel at its southern opening was traced, by actual survey, in a long horse-shoe curve, sharply defined against the solid ice of Smith's Sound, and terminating at its extremes against two noble headlands about forty miles apart. The western coast was followed, in subsequent explorations, to a mural face of nine hundred feet elevation, preserving throughout its iceless character. Here a heavy surf, beating directly against the rocks, checked our future progress.

This precipitous headland, the furthest point attained by the party, was named Cape Independence. It is in latitude $81^{\circ} 22' N.$ and longitude $65^{\circ} 35' W.$ It was only touched by William Morton, who left the dogs and made his way to it along the coast. From it the western coast was seen stretching far toward the north, with an iceless horizon, and a heavy swell rolling in with white caps. At a height of about five hundred feet above the sea this great expanse still presented all the appearance of an open and iceless sea. In claiming for it this character I have referred only to the facts actually observed, without seeking confirmation or support from any deduction of theory. Among such facts are the following:—

1. It was approached by a channel entirely free from ice, having a length of fifty-two and a mean width of thirty-six geographical miles.
2. The coast-ice along the water-line of this channel had been completely destroyed by thaw and water-action; while an unbroken belt of solid ice, one hundred and twenty-five miles in diameter, extended to the south.
3. A gale from the north-east, of fifty-four hours' duration, brought a heavy sea from that quarter, without disclosing any drift or other ice.
4. Dark *nimbus* clouds and water-sky invested the north-eastern horizon.
5. Crowds of migratory birds were observed thronging its water.

Two islands on the threshold of this sea, the most northern islands known, bear the names of Sir John Franklin and his associate, Captain Crozier, the leaders of the gallant party for which we had been in search.

To the north-west the coasts became mountainous, rising in truncated cones, like the Magdalena Cliffs of Spitzbergen. The furthest distinctly-sighted point was a lofty mountain, bearing $N. 5^{\circ} E.$, (solar); its latitude, by estimate and intersection, was $E. 2^{\circ} 30'$. Its longitude, as thus determined, would give $66^{\circ} W.$, (approximative).

I would suggest for it the name of the late Sir Edward Parry, who, as he has carried his name to the most northern latitude yet reached, should have in this, the highest known northern land, a recognition of his pre-eminent position among Arctic explorers.

The extension of the American coast to the south-west, as it appears upon the chart, was the work of Dr. Hayes and William Godfrey, renewed and confirmed by myself in April of the present year. It completes the survey of the coast as far as the Cape Sabine of Captain Inglefield. The land is very lofty, sometimes rising at its culminating peaks to the height of two thousand five hundred feet. The travel along the western and north-western coast was made for the most part upon the ice-foot. One large bay, in latitude $79^{\circ} 40' N.$, longitude $73^{\circ} W.$, by estimate, extended forty miles into the interior, and was terminated by a glacier. A large island occupies the south-western curve of that bay.

A summary of the operations of the expedition will therefore comprehend—

1. The survey and delineation of the north coast of Greenland to its termination by a great glacier.
2. The survey of this glacial mass and its extension northward into the new land named Washington.
3. The discovery of a large channel to the north-west, free from ice, and leading into an open and expanding area equally free. The whole embraces an iceless area of four thousand two hundred miles.
4. The discovery and delineation of a large tract of land forming the extension northward of the American continent.

5. The completed survey of the American coast to the south and west as far as Cape Sabine, thus connecting our survey with the last-determined position of Captain Inglefield, and completing the circuit of the straits and bay heretofore known at their southernmost opening as Smith's Sound.

The summer of 1854 had brought with it few changes bearing toward the liberation of our brig. The melted snows did not run in the water-channels until the 30th of June, and our limited flora showed a tardy and inauspicious season.

On the 12th of July, the ice being still unbroken as far as Anaktok, I set out in a whaleboat with five volunteers, to communicate, if possible, with our English brethren whom we supposed to be at Beechy Island. The declining state of our resources suggested this attempt, although it promised many difficulties.

It occupied us until the 6th of August. We found a solid pack extending from Jones's to Murchison Sounds, between Clarence Head and Northumberland Island. To the west the ice still invested the American shore, extending some twenty miles from Cape Isabella. Between this and Mitie Island was a solid surface, the curved shore-line occupied by an extended glacier.

After endeavouring several times to bore, we were forced to make Hakluyt Island, on the Greenland side, and landed there to rest and renew our stock of provisions. The pack still filled the channel between that island and Cape Parry; and it was only with extreme effort that we were able to carry our boat over the ice. We had approached in this manner within ten miles of the latter point, when, seeing no chance of success, the winter rapidly advancing upon us, I reluctantly gave orders for our return to the brig. During this journey, which was full of exciting contingencies, we passed over the track of Bylot and Baffin, the explorers of 1616.

Our preparations for the second winter were modified largely by controlling circumstances. The physical energies of the party had sensibly declined. Our resources were diminished. We had but fifty gallons of oil saved from our summer's seal-hunt. We were scant of fuel; and our food, which now consisted only of the ordinary marine stores, was by no means suited to repel scurvy. Our molasses was reduced to forty gallons, and our dried fruits seemed to have lost their efficiency.

A single apartment was bulkheaded off amidships as a dormitory and abiding-room for our entire party, and a moss envelope, cut with difficulty from the frozen cliffs, made to enclose it like a wall. A similar casing was placed over our deck, and a small tunnelled entry—the *tossut* of the Esquimaux—contrived to enter from below. We adopted as nearly as we could the habits of the natives, burning lamps for heat, dressing in fox-skin clothing, and relying for our daily supplies on the success of organized hunting-parties.

The upper tribes of these Esquimaux had their nearest winter settlement at a spot distant, by dog-journey, about seventy-five miles. We entered into regular

communication with this rude and simple-minded people, combining our efforts with theirs for mutual support, and interchanging numerous friendly offices. "Bear-meat, seal, walrus, fox, and ptarmigan, were our supplies. They were eaten raw, with a rigorous attention to their impartial distribution."

With the dark months, however, these supplies became very scanty. The exertions of our best hunters were unavailing, and my personal attempts to reach the Esquimaux failed less on account of the cold (minus 52°) than the ruggedness of the ice, the extreme darkness, and the renewal of tetanic diseases among our dogs. Our poor neighbours, however, fared worse than ourselves: famine, attended by frightful forms of disease, reduced them to the lowest stages of misery and emaciation.

Our own party was gradually disabled. Mr. Brooks and Mr. Wilson, both of whom had lost toes by amputation, manifested symptoms of a grave character. William Morton was severely frozen; and we were deprived of the valuable services of the surgeon by the effects of frost-bite, which rendered it necessary for him to submit to amputation.

Scurvy with varying phases gradually pervaded our company, until Mr. Bon-sall and myself only remained able to attend upon the sick and carry on the daily work of the ship, if that name could still appropriately designate the burrow which we inhabited. Even after this state of things had begun to improve, the demoralizing effects of continued debility and seemingly hopeless privation were unfavourably apparent among some of the party. I pass from this topic with the single remark that our ultimate escape would have been hazarded, but for the often painfully-enforced routine which the more experienced among us felt the necessity of adhering to rigorously under all circumstances.

In the latter part of March the walrus again made their appearance among the broken ice to the south, and we shared with the Esquimaux the proceeds of the hunt. The hemorrhages which had much depressed our party subsided, and we began slowly to recover our strength. The sun came back to us on the 21st of February; and by the 18th of April the carpenter and several others were able to resume their duties.

In view of the contingencies which I had long apprehended, I found it necessary to abandon the brig. We had already consumed for firewood her upper spars, bulwarks, deck-sheathing, stanchions, bulk-heads, hatches, extra strengthening-timbers—in fact, everything that could be taken without destroying her sea-worthiness. The papers which I append show the results of the several surveys made at this time by my orders. It will be seen from them that we had but a few weeks' supply left of food or fuel; that the path of our intended retreat was a solid plain of ice, and that to delay a third winter, while it could in no wise promote the search after Sir John Franklin, would prove fatal to many of our party.

Our organization for the escape was matured with the greatest care. Three boats—two of them whale-boats twenty-four feet in length, and the third a light cedar dingy of thirteen feet—were mounted upon runners cut from the cross-beams of the vessel and bolted, to prevent the disaster of breakage. These runners were eighteen feet in length, and shod with hoop-iron. No nails were used in their construction; they were lashed together so as to form a pliable sledge, and upon it the boats were cradled so as to be removable at pleasure.

A fourth sledge, with a team of dogs, was reserved for the transport of our sick, four of whom were still unable to move, and for carrying on our stock of provisions. An abandoned Esquimaux hut, about thirty-five miles from the brig, was fitted up as well as our means permitted, to serve as an *entrepot* of stores

and a wayside shelter for those of the party who were already broken down, or who might yield to the first trials of the journey.

The cooking-utensils were made from our old stove-pipe. They consisted of simple soup-boilers, enclosed by a cylinder to protect them from the wind. A metal trough to receive fat, with the aid of moss and cotton canvas, enabled us to keep up an active fire. My provisions were packed in water-proof bags, adapted in shape to the sheer of the boats, and in no case rising above the thwarts. They consisted, with the exception of tea, coffee, and small stores for the sick, exclusively of melted fat and powdered biscuit.

The clothing was limited to a fixed allowance. Moccasins for the feet were made of our woollen carpeting, which had been saved for the purpose, and numerous changes of dry blanket-socks were kept for general use. For bedding our buffalo-ropes were aided by eider-down quilted into coverlets: the experience of former travel having assured us that, next to diet and periodical rest, good bedding and comfortable foot-gear were the most important things to be considered.

I took upon myself the office of transporting the sick and our reserve of provisions, employing for this purpose a dog-sledge and our single team of dogs. I carried down my first load of stores in April, and on the 15th of May began the removal of the sick. By the middle of June all our disabled men and some twelve hundred pounds of stores had in this manner been transferred by a series of journeyings equal in the aggregate to eleven hundred miles.

On the 17th of May, having authenticated by appropriate surveys the necessities of our condition, and made all our preparations for the journey, the sledge-boats left the vessel, dragged by the officers and men, under the immediate charge of Mr. Henry Brooks—a duty which he fulfilled with unswerving fidelity and energy.

My collections of natural history were also carried as far as the sick-station at Anaatok; but, under a reluctant conviction that a further effort to preserve them would risk the safety of the party, they were finally abandoned. It is grateful to me to recollect the devotion of my comrades, who volunteered to sacrifice shares of both food and clothing to secure these records of our labours.

We were able, not without difficulty, to carry our chronometers and the various instruments, magnetic and others, which might allow me still to make and verify our accustomed observations. We left behind the theodolite of the United States Coast Survey and the valuable self-registering barometric apparatus furnished by the American Philosophical Society. Our library, as well those portions which had been furnished by the government and by Mr. Grinnell as my own, were necessarily sacrificed. We preserved only the documents of the Expedition.

The first portions of our journey filled me with misgivings, as the weakness of the party showed itself in dropsical swellings and excessive difficulty of respiration. In spite of a careful system of training, the first exposure to temperatures ranging about zero and below it were to an invalid party extremely trying; and for the first eight days the entire distance accomplished from the ship did not exceed fifteen miles. Although the mean rate of transportation was afterward increased, it never exceeded three and a half miles a-day over ice. Some idea may be formed by the Department of the nature of this journey from the fact, that every three and a half miles thus attained cost us from twelve to fifteen miles of actual travel.

To sustain the party by the aid of fresh food required dog-journeys to the south settlements of the Esquimaux, distant from us about seventy-five miles. I found it necessary, also, to return from time to time to the brig, with the view of aug-

menting our supplies. My last visit to her was on the 8th of June, for the purpose of procuring some pork to serve for fuel. She was then precisely as when we left her on the 17th of May, immovably frozen in, with nine feet of solid ice under her bows. We availed ourselves of the occasional facilities which these visits allowed us to increase our stock of bread, of which we succeeded in baking four hundred and eighty pounds.

Continuing our southward progress, we neared Littleton Island. Our sick, first left at Anaktok, were gradually brought down to the boats as some of them gained strength enough to aid in the labour of dragging. The condition of the ice as it became thinner and decaying made this labour more difficult; and, in the course of our many breaks through, several of the party narrowly escaped being carried under by the tides. In the effort to liberate our sledges from the broken ice after one of these accidents, Acting Carpenter Ohlsen received an internal injury. Paralysis of the bladder was rapidly followed by tetanic symptoms, and he died on the 12th of June, three days after his attack. He has left behind him a young wife, who depended entirely upon him for support. He was buried upon Littleton Island, opposite a cape which bears his name.

From this stage of our journey up to the time of reaching the first open water, which was near Cape Alexander, we were comforted by the friendly assistance of the Esquimaux of Etah. These people faithfully adhered to the alliance which we had established during the winter. They brought us daily supplies of birds, helped us to carry our provisions and stores, and in their daily intercourse with us exhibited the kindest feeling and most rigid honesty. When we remembered that they had been so assuming and aggressive upon our first arrival that I was forced to seize their wives as hostages for the protection of our property, their present demeanour was not without its lesson. Once convinced of our superiority of power, and assured of our disposition to unite our resources with theirs for mutual protection and support, they had relied upon us implicitly, and strove now to requite their obligations toward us by ministering to our wants.

We left them on the 18th of June at the margin of the floe. In thirty one days we had walked three hundred and sixteen miles, and had transported our boats over eighty-one miles of unbroken ice. The men, women, and children of the little settlement had also travelled over the ice to bid us good-bye, and we did not part from them without emotion.

The passage between this point and one ten miles north-west of Hakluyt Island was in open water. It was the only open water seen north of Cape York, in latitude $75^{\circ} 59' N$. We ran this under sail in a single day, hauling upon the ice to sleep. This ice was a closed pack, hanging around the north and south channels of Murchison Sound, and seemingly continued to the westward. The land-ices were still unbroken, and we were obliged to continue our journey by alternate movements over ice and water. So protracted and arduous were these, that between the 20th of June and the 6th of July we had advanced but one hundred miles.

Our average progress was about eight miles a day, stopping for our hunting parties and for sleep. Great care was taken not to infringe upon the daily routine. We had perpetual daylight; but it was my rule, rarely broken even by extreme necessity, not to enter upon the labours of a day until we were fully refreshed from those of the day before. We halted regularly at bed-time and for meals. The boats, if afloat, were drawn up, the oars always disposed on the ice as a platform for the stores; our buffalo-skins were spread, each man placed himself with his pack according to his number, the cook for the day made his fire,

and the ration, however scanty, was formally measured out. Prayers were never intermitted. I believe firmly that to these well-sustained observances we are largely indebted for our final escape.

As we moved onward, we were forced to rely principally on our guns for a supply of food. We suffered, when off the coast immediately north of Wostenholme Sound, from a scarcity of game, and were subjected to serious sickness in consequence. But at Dalrymple Island, a little further south, we recruited rapidly on eggs of the eider-duck; and from this point to Conical Rock we found birds in abundance. Again, at the most uncertain period of our passage, when our stock of provisions were nearly exhausted, we were suddenly arrested in our course by high and rugged land-ice, which hugged a glacier near Cape Dudley Digges. We were too weak to drag our boats over this barrier, and were driven in consequence to land under the cliffs. To our joyful surprise, we found them teeming with animal life. This transition from enfeebling want to the plenty which restored our strength, we attributed to the direct interposition of Providence. The *tumme* (Uriæ, Brunichii, and Troile) was the fowl which we here found in greatest numbers. We dried upon the rocks about two hundred pounds of its meat, which we carefully saved for the transit of Melville Bay.

The rest of the coast, except under the glaciers, was followed with less difficulty. We found peat of good quality, and plenty of food. Our daily allowance of birds was twelve to a man. They were boiled into a rich soup, to which we added a carefully measured allowance of six ounces of bread.

On the 21st we reached Cape York, and, finding no natives, made immediate preparations for crossing Melville Bay. An extended view showed the land-ice nearly unbroken, and a large drift of pack to the southward and westward. A beacon-cairn was built, and strips of red flannel fastened to a flagstaff so placed as to attract the attention of whalers or searching-parties. I deposited here a notice of our future intentions, a list of our provisions on hand, and a short summary of the discoveries of the cruise.

Up to the 26th of July our traverse of Melville Bay was along the margin of the land-ice, with only twice a resort to portage. We came then upon comparatively open drift extending to the southward and westward, which, after mature consideration, I determined to follow. There were arguments in favour of a different course, perhaps for the time less hazardous; but the state of health among my comrades admonished me that it was best to encounter the risks that were to expedite our release. The reduced bulk of our stores enabled us now to consolidate the party into two boats, breaking up the remaining one for fuel, of which we were in need. Our lengthened practice of alternating boat and sledge-management had given us something of assurance in this mode of travel, and we were, besides, familiarized with privation. It was a time of renewed suffering; but, in the result, we reached the north coast of Greenland, near Horse's Head, on the 3d of August, and, following thence the inside passage, arrived on the 6th at Upernavik, eighty-three days after leaving the *Advance*. We did not intermit our observations by sextant and artificial horizon as we came down the bay, and succeeded in adding to our meteorological and magnetic registers. These, including a re-survey of the coast as laid down in the Admiralty charts, will be included in a special report to the Department.

We were welcomed at the Danish settlements with characteristic hospitality. The chief trader, Knud Gelmeyden Fleischer, advanced to us from the stores of the Royal Greenland Trading Company at Upernavik whatever our necessities required; and when we afterward reached Godhavn, the seat of the royal in-

spectorate, Mr. Olrik, the inspector, lavished the kindest attentions upon our party.

We had taken passage at Upernavik in the Danish brig *Marianne*, then upon her annual visit to the Greenland colonies, Captain Amdansen, her very courteous and liberal commander, having engaged to land us at the Shetland Isles on his return route to Copenhagen. But, touching for a few days at Disco, we were met by the vessels which had been sent after us, under the command of Lieutenant Hartstene. I have no words to express the gratitude of all our party toward that noble-spirited officer and his associates, and toward our countrymen at home who had devised and given effect to the expedition for our rescue.—I have the honour to be, very respectfully, sir, your most obedient servant,

E. K. KANE.

FISKERNAES, SOUTH GREENLAND, July 6, 1853.

SIR,—We reached this place on the 5th instant, after a run of twelve days from St. John's, Newfoundland.

By means of special facilities extended to our expedition by the Danish government, we have been able to obtain from the Royal Greenland Company supplies of fresh dried codfish, as also a native Esquimaux as hunter. This boy will take with him his kayak, and is expected to prove of essential service.

We have as yet encountered no ice. It is my intention to stop at Sukkertoppen to purchase reindeer-skins.—I am, sir, very respectfully, your obedient servant,

E. K. KANE.

HON. SECRETARY OF THE NAVY,
Washington.

UPERNAVIK, NORTH GREENLAND, July 24, 1853.

SIR,—I have the honour to report the safe arrival of myself and party at Upernavik.

Being much delayed by calms, I deemed it unadvisable to stop at Godhavn, but have lost no time in proceeding north. Our full complement of dogs is now on board, and we leave in a few hours for Melville Bay.

I have engaged the valuable services of Mr. Carl Johan Petersen, late interpreter to Captain Penny's expedition of search. If we should meet the Esquimaux north of Cape Alexander, he will be essential to our party.

The officers and men are in excellent health and spirits.—I am, sir, very respectfully, your obedient servant,

E. K. KANE.

HON. SECRETARY OF THE NAVY,
Washington.

[Deposited in Cairn—lat. 78° 24' N.—August 7, 1853.]

ADVANCE, August 7, 1853.

SIR,—I have the honour to report our successful transit of Melville Bay, and safe arrival within the waters of Sir Thomas Smith's Sound.

This letter will be deposited in a cairn on Littleton Island, in latitude 78° 24' N. The prospects of a further progress have led me to leave near this spot a metallic life-boat, with a supply of stores, as a means of retreat should our vessel be imprisoned in the ice.

The course of our party will be from this date along the coast of Greenland, trending to the north and east. If a possible chance presents itself of forcing the brig into a northern sea, I will endeavour, before availing myself of such a chance, to leave another cairn, announcing my point of departure.

Our officers and men are in excellent health and spirits, and no cases have yet occurred of scurvy or other serious disease.

After the brig is obliged to go into winter quarters, I intend to start with a carefully-equipped party to establish a dépôt for the final labours of next season. Our dogs are in admirable condition, and well broken to harness.—I am, sir, very respectfully, your obedient servant,

E. K. KANE.

HON. SECRETARY OF THE NAVY,
Washington.

No. III.

SURVEYS BEFORE ABANDONING THE BRIG.

Orders to Mr. M'Gary to examine the State of the Ice.

TO SECOND OFFICER, JAMES M'GARY.

SIR,—William Godfrey and the sledge will be placed at your disposition. After sleeping at Anoatok, proceed on the next day to Cape Hatherton and Flagstaff Point, returning to the brig on Monday, 14th of May.

The object of this journey is, that you may compare the ice of this season with that seen in your last year's inspection. You are requested to note accurately the condition and advance of the open water, and report in writing your opinion as to the possibility of its reaching our brig in time to escape during the coming year.—Respectfully yours,

E. K. KANE,

Commanding Expedition.

BRIG ADVANCE, April 12, 1855.

Second Officer M'Gary's Report.

BRIG ADVANCE, May 15, 1855.

TO E. K. KANE, Esq., *Commanding Grinnell Expedition.*

SIR,—By your orders I examined the ice at this time last year from the point at which I now renew my inspection.

Last year the open water was about a mile south of Fog Inlet, and the ice broken into floes or drift for about two miles further: the water along the ice-foot reached to Esquimaux Point. The surface-ice of the channel was thin and wet, and broken into small pools. Water was seen in the offing as far as the eye could reach with your telescope, (a 20-diam. Fraunhofer).

At the present date from the same stations no water can be seen, but heavy, rank ice, very hummocky to westward, and covered with snow-drifts. By going to Littleton Island, (Flagstaff Point), about fifteen miles further down the

channel, I found the water between six and eight miles off; beyond it the sky was dark and everything clear and open. To the westward the water met the ice about ten miles distant.

My opinion is that there is no possible chance of the water coming within twenty miles of the brig. The floe is old and heavy, and it breaks slowly. It is now more than twice as far from the brig as it was at this time last year. It will have to break up faster than ever I saw ice break to reach us this season. I regard it therefore as impossible for the vessel to be liberated with the coming year.—Yours respectfully,

JAMES M'GARY,
Second Officer.

Orders for a full inspection of the remaining Stock of Provisions.

TO MESSRS. BROOKS, RILEY, MORTON.

GENTLEMEN,—You will hold a survey upon the beef, pork, flour, and bread, remaining in the stores of the expedition, and report in writing upon their condition and the quantity on hand fit for use.—Very respectfully, your obedient servant,

E. K. KANE,
Commanding Expedition.

BRIG ADVANCE, May 16, 1855.

Report of Inspection.

BRIG ADVANCE, May 16, 17.

TO E. K. KANE, Esq., *Commander Grinnell Expedition.*

SIR,—In accordance with your order of the 16th inst., we have carefully examined the condition and quantity of the provisions remaining on board, namely, beef, pork, flour, and bread, and report the following:—

Seven barrels beef unfit for use;

Six barrels pork entirely unfit for eating;

and since June 1854, with the nicest selection, we got but sixty pounds eatable pork.

Four barrels flour in good condition;

Bread there is none left;

and in our opinion thirty-six days' provisions is the most there is.—Very respectfully, your obedient servants,

HENRY BROOKS,
GEORGE RILEY,
WILLIAM MORTON.

Orders to Carpenter, Second Officer, and Mr. Bonsall, to examine and report on the condition of the Brig.

MESSRS. OHLSEN, M'GARY, BONSALL.

GENTLEMEN,—You will do me the favour to hold a careful survey upon the

brig, and give me your opinion in writing whether it be possible to cut from her more firewood without rendering her unseaworthy.

Have we one month's firewood on board or in the ship?—Respectfully, your obedient servant,

E. K. KANE,
Commanding Expedition.

BRIG ADVANCE, May 16, 1853.

Report on Condition of the Brig.

BRIG ADVANCE, May 17, 1853.

SIR,—In accordance with your orders, we have held a careful survey upon the brig, and give it as our decided opinion that we cannot cut from her more firewood without rendering her unseaworthy.

We have computed the present amount of firewood on board, including the trebling, to be equal to fourteen days' consumption.—We are, respectfully, your obedient servants,

CHRISTIAN OHLSEN, Carpenter.
J. M'GARY, Second Officer.
AMOS BONEALL.

To E. K. KANE, Esq.,
Commanding Expedition.

NO. IV.

Letter from the Hon. Secretary of the Navy to Lieut. Hartstene.

NAVY DEPARTMENT, May 25, 1853.

SIR,—A resolution of Congress, approved February 3, 1853, authorizes the Secretary of the Navy "to provide and despatch a suitable naval or other steamer, and, if necessary, a tender, to the Arctic seas, for the purpose of rescuing or affording relief to Passed Assistant Surgeon E. K. Kane, of the United States Navy, and the officers and men under his command."

The barque *Release* and steamer *Arctic* having been procured and especially fitted and equipped for this service under your supervision and inspection, with full rations and extra provisions for two years, and clothing peculiarly adapted for the climate of the Arctic regions, and such officers and men detailed as the Department, as well as yourself, considered necessary and sufficient, and the command of the expedition having been already assigned to you, you will, so soon as the above-named vessels are in all respects ready for sea, proceed with them, by all means as early as the first of June, in the prosecution of the object of the resolution of Congress, economizing as much as possible in the use of coal.

It is understood from reliable sources that you can renew your supply of coal at Waigat Island, at which point it would seem to be advisable that you should touch, unless unforeseen circumstances admonish you to do otherwise, or some more practicable point should be ascertained by you. I will endeavour to procure and forward to you letters of introduction from the representative of Denmark to the governor of the Danish settlements, at which it may be useful and prudent that you should touch, for the purpose of making inquiry and procuring information.

Dr. Kane sailed from New York in the *Advance* early in June 1853, since which time the Department has received no information from him. It is believed, however, that intelligence was received of him at Upernavik, in July

1853, by his father, Judge Kane, of Philadelphia. The expedition was then going north ; and this is the last that has been heard from it. The Department, however, learns, and deems it proper to put you in possession of the information, that it was the intention of Dr. Kane, after leaving Upernavik, on his way up, to make a depot of provisions and erect a beacon, &c., at Cape Alexander, the east cape of Smith's Sound, or at Cape Isabella.—most probably the former. The Department further learns that it was then the intention of Dr. Kane to pass up Smith's Sound and proceed west ; and in case it was necessary for him to abandon his vessel, he would make for Beechy Island.

Should you fall in with any of Franklin's party, your own humane feelings will suggest the propriety of extending to them all the relief in your power.

Before sailing, you will acquaint Lieutenant C. C. Simms, who has been ordered to command the *Arctic*, and whom, of course, you will consider as your second in command, fully with all your plans and intentions, and appoint places of rendezvous, so that, in case the two vessels of the expedition may at any time become separated, each may know where to look for the other.

You will seize any opportunity that may offer of communicating with the Department, informing it of your progress and your future movements ; and you will also take particular care to avail yourself of every occasion for leaving, as you proceed, records and signs to tell of your condition and intentions. For this purpose you will erect flagstaffs, make piles of stones, or other marks, in conspicuous places, burying a bottle at the base containing your letters. Should the two vessels be separated, you will direct Lieutenant Simms to do likewise.

The Department has every confidence in your judgment, and relies implicitly upon your sound discretion. You are aware of the generous considerations which prompted Congress to authorize this mission of humanity. I have determined to trust you with its execution, *untrammelled by stringent directions, which might embarrass you, and conflict with the suggestions of circumstances and developments of the future.* Judge Kane, the father of the doctor, is in possession of much important information left by his son, to be used in the event of a search for him. This will aid you much. I would suggest, however, that you should, unless constrained by strong hopes of future success, avoid passing a winter in the Arctic regions, and on no account uselessly hazard the safety of the vessels under your command, or, what is of more importance, unnecessarily expose to danger the officers and men committed to your charge. Your attention is also especially directed to the care and preservation of their health, for which hygienics have been abundantly furnished.

I transmit herewith, for your information and guidance, a copy of the instructions to Dr. Kane, dated November 27, 1852, as also copies of a series of letters from Sir Edward Parry, Sir Francis Beaufort, and other Arctic authorities, written by command of the British Admiralty, and kindly furnished to Dr. Kane, with the object of advancing the interests of the expedition to which he had been assigned by the Department.

Sincerely trusting that you may be enabled to carry out successfully the objects of the expedition under your command, and that a divine Providence will protect you in the hazardous enterprise for which you and your companions have so nobly volunteered, I am, respectfully, your obedient servant,

J. C. DOBBLIN.

Lieut. HENRY J. HARTSTENE,
S. Navy, Commanding Expedition for Relief
of Dr. Kane and Companions, New York.

Report of Lieut. Hartstene to the Hon. Secretary of the Navy.

UNITED STATES BARQUE RELEASE,
LIEVELY, ISLE OF DISCO, GREENLAND, July 9, 1855.

SIR,—I have the honour to inform you of the arrival of the Arctic expedition here on the 5th instant, after a most boisterous passage, during most of which we were enveloped in dense fogs, and were much retarded by towing the *Arctic* nearly to the southern point of Greenland, where it was deemed advisable to separate, that this vessel might hasten on to make some necessary arrangements; but, much to my agreeable surprise, by good management and favourable winds, our consort came in a few hours after us, having used steam but for a short time.

The first iceberg was seen in latitude $51^{\circ} 30' N.$, longitude $51^{\circ} 40' W.$; and about sixty miles further north we found thick extreme ridges of "sailing ice," so heavy as to make it necessary to avoid them, which we successfully managed during daylight; but, after dark, while going under all sail six knots, we ran suddenly into one of them, bringing us up all standing, and caused our consort, towing astern, to foul us, without, however, doing any material damage. Pressing on, we bored through, and had but fairly relieved ourselves, when we encountered a heavy blow, with much sea and ice in all directions, requiring incessant care and manœuvring to prevent being thrown against, to the inevitable destruction of the vessels. Since then we have had bergs daily in sight. The numbers increased as we advanced north to this place, off where there are now several hundred, stalking quietly and majestically.

The accounts of the extreme severity of the present winter have induced me to remain here a few days to have a quantity of fur clothing prepared, to enable us to winter, as we shall probably be compelled to do, with more safety in the Arctic ice. Through the many facilities offered, and the obliging kindness of Mr. Olrik, the government agent, we have succeeded in effecting all, and are now ready, and will leave this day for the Waigat Strait, to take as much coal as possible, and proceed north to Cape Alexander, touching off Upernavik for information.

Our records and communications, at the different points touched at after entering the ice barrier, will be deposited in bottles buried within twelve feet north by compass of cairns erected on the most conspicuous and accessible points.

To avoid further risk of human life in a search so extremely hazardous, I would suggest the impropriety of making any efforts to relieve us if we should not return, feeling confident that we shall be able to accomplish all necessary for our own release under the most extraordinary circumstances.

In conclusion, it affords me much pleasure to state that we are all well and in full spirits.—Very respectfully &c., your obedient servant,

H. J. HARTSTENE,
Lieutenant commanding Arctic Expedition.

Hon. J. C. DOBBIN,
Secretary of the Navy, Washington, D.C.

DOBBIN.

Report of Lieut. Hartstene to the Hon. Secretary of the Navy.

UNITED STATES BARQUE RELEASE, OFF UPERNAVIK, July 16, 1855.

SIR,—Herewith enclosed is a duplicate of my last communication, left at Lively, to be sent to its destination by the first opportunity.

On the 10th, in company with the *Arctic*, we started from the latter place for the coal district in Waigat Strait; but, on arriving off the supposed position of it, the weather became so boisterous and thick that, after several times narrowly escaping running on shore by shaving the coast too close, I reluctantly abandoned the idea of losing time here on an uncertainty, and made immediately for this port, where we have just arrived. While becalmed off Hare Isle, at the north-west entrance of the Waigat Strait, I succeeded in obtaining there about nine tons of inferior coal, which, however, will answer very well for cooking-purposes.

On our passage up we fell in with two English whalers who had been up as far as Horsehead Isle, and, after ineffectual efforts to enter Melville Bay, had given it up, and were on their way to try the western coast. They represented the last winter as having been very severe, and the ice now unusually close, and think we shall not be able to enter for several weeks.

I shall remain here but a few hours to obtain some furs, and by to-morrow morning will be at the ice-barrier, as we have a strong favourable wind.

There is no news of the missing party. We are all well.—Very respectfully your obedient servant,

H. J. HARTSTENE,

Lieutenant commanding Arctic Expedition.

HON. J. C. DOBBIN,

Secretary of the Navy, Washington, D.C.

*Report of Lieut. Hartstene to the Hon. Secretary of the Navy.*UNITED STATES BARQUE RELEASE, BAFFIN'S BAY,
Lat. 69° 39' N., lon. 63° 30' W., September 8, 1855.

SIR,—We have suddenly and unexpectedly fallen in with an English whaler, which necessitates me to draw up, rather hastily, an account of our efforts since my last communication of the 16th of July, from Upernivik, on the afternoon of which date both vessels stood to the northward, and in a few hours met the ice drifting down in an extended floe, but so loose as to permit of our working along under sail some forty miles to Wedge Island, where its closeness obliged us to moor to bergs and await several days, when suddenly, and without any apparent cause, but the remarkably mysterious currents, it disappeared and left us open water, through which we steamed uninterruptedly to Sugar-Loaf Island, and entered the closely-packed floe of Melville Bay, through which, by strenuous and untiring efforts, and being so fortunate as never to have entered a false lead or to have lost any by drifts, we forced a passage into the North Water on the morning of the 13th August, twenty-eight days after our entrance of the barrier. With our invaluable little *Arctic* ahead, we passed within good view of the coast from Cape York to Wostenholme Island, when I deemed it advisable and hastened on in the steamer (leaving this vessel in charge of Lieutenant Simms, to follow with all despatch) to Cape Alexander, which, with Sutherland Island near to, both most conspicuous points, beyond the reach of Esquimaux, were thoroughly exa-

mined; but not the slightest evidence was found to indicate that they had ever before been trodden by civilized men. Much chagrined and disappointed, I deposited a record of our visit, and further instructions for the *Release*; then rounded the cape with a strong head-wind, and ice extending in a compact mass to the western shore and as far north as could be seen, leaving, however, a narrow lead so near the land as to allow us to discern the smallest objects. We passed on; but naught was seen until we reached the most north-western point in sight, which we supposed to be Cape Hatherton, but was afterwards proved to be Pelham Point, where a few stones were observed together. A party, with Acting Master Lovell and Dr. Kane, of the steamer, landed immediately, and found beneath this carelessly-erected mark a small vial with the letter K cut in the cork, containing a large mosquito, with a small piece of cartridge paper for one of Sharpe's rifles, prepared in Philadelphia, the ball of which was lying by it; on this was written, apparently with the point of the ball, "Dr. Kane, 1853." This was extremely perplexing, but assured us of his having been there, and I determined to push on as far north as possible. But, on rounding this point, which was found to be in latitude $78^{\circ} 32' N.$,—further, it is believed, than any one before had ever reached on this side,—we were opposed by a solid, hummocky field of very heavy ice, to which no limit was visible, interspersed with many bergs, all drifting to the southward. Under sail, we dropped with it, anxiously watching for an opening, examining Cape Hatherton and Littleton Island in our retrograde, without any success, though Dr. Kane, in his last letter to his brother, which I have adopted as my guide, emphatically says, "On Cape Alexander or Cape Hatherton I will deposit my boat and erect a 'cairn.'" We finally took refuge under a projecting point, some fifteen miles north-west of Cape Alexander, when we were startled by the hail of human voices. A party, including myself and the surgeon of the *Arctic*, brother of Dr. Kane, started off forthwith, exultingly, with light hearts, confident that they were of the missing party; but, after a long and anxious pull, we were met by two Esquimaux, who appeared very anxious to go off to the brig; but, on being refused, they significantly pointed up a deep, most beautiful, and finely sheltered bay, inducing us to think that there was there a settlement; and, as we should lose no time, I assented. And well were we compensated for our trouble; for, after reaching the bottom of it, some three miles distant, we landed, and soon reached a settlement of some thirty of them, in seven tents, all covered with canvas. We now discovered many other articles, such as tin pans and pots, canvas, and iron spikes, preserved-meat cans, a knife and fork, bake-pan for a vessel's galley, various spools of thread, several Guernsey frocks, and a cotton shirt, with the initials, "H. B." marked with red thread, which was supposed to have been the property of the boat-swain of the *Advance*, whose wife was a Mahonese, and the marking was evidently her handiwork. There were also broken oars and pieces of slats; and, finally, we found the tube of a telescope, which was recognised as having belonged to Dr. Kane. A close examination of the most intelligent of them, at three separate periods, by myself, Mr. Lovell, and Dr. Kane's brother, aided by an Esquimaux vocabulary and representations in drawing of vessels, persons, and boats, put us in possession of what I believe to be the fact,—namely, that Dr. Kane (whose name the natives pronounced very distinctly, and described most unmistakably his appearance) having lost his vessel in the ice somewhere to the north of this, had been here, with Carl Petersen (his interpreter) and seventeen others, in two boats and a sled, and, after remaining ten days, they went south, to Upernavik. With all these evidences, I deemed it my duty to

return south, touching again at Cape Alexander and Sutherland Islands; and, joining the barque, towed her to Hakluyt Island, to water ship and examine for relics. In the meantime the south side of Northumberland Island was passed and repassed by the *Arctic*, she returning; and with the barque we stood over to the entrance of Lancaster Sound, and, thinking possibly he may have gone to Beechy Island, I left the barque, to examine the coast between Capes Horsburg and Warrander, and, in the *Arctic*, attempted to reach the island; but, after passing Cape Bullin, found the field-ice firmly packed, which we coursed from shore to shore, without any opening to induce a further attempt. In the meantime we became firmly beset; and the weather, becoming thick with snow, led me to suppose for a time that we were in our winter quarters; but, by dint of steam and a powerful bow, we succeeded, after twenty-four hours' heavy battering, in relieving ourselves. Returning off the cruising-ground of our consort, and not seeing her, I ran north as far as Cape Combermere, where we were again opposed by a solid barrier of the firmest ice; thus having made nearly the whole circuit of the northern part of Baffin's Bay, with the exception of a deep indentation between Capes Combermere and Isabella, which, from its ice-bound and cheerless appearance, forbade the idea of any one having attempted to land on its shores. We then returned, and, in company, visited and examined Possession and Pond's Bays, firing guns, burning blue-lights, and throwing up rockets; but here again we were disappointed, and I unhesitatingly deemed it my duty to proceed forthwith to Upernavik, feeling confident that the party had gone there through Melville Bay,—no uncommon undertaking, as the crews of many whalers lost in the ice had done so before. Therefore, on the morning of the 31st of August, we again pushed on for the ice-barrier, which we passed, after many difficulties and narrow escapes, in one of which the vessel was, in a snow-storm, brought in collision with an iceberg, against whose sides she was thrown most ruthlessly for several hours, to our apparent inevitable destruction, but from which she was finally released, with slight damages to her starboard upper works.

In conclusion, I would add, we are all well; and, should we not meet with the missing party at Upernavik, shall again proceed north, and winter in the ice.—Very respectfully your obedient servant,

H. J. HARTSTENE,

Lieutenant commanding Arctic Expedition.

Hon. J. C. DOBBIN,
Secretary of the Navy, Washington, D.C.

Report of Lieut. Hartstene to the Hon. Secretary of the Navy.

UNITED STATES BARQUE RELEASE, NEW YORK, October 11, 1855.

SIR,—I have the honour to report the arrival here, this day, of the Arctic expedition, with Dr. Kane and his associates, who were received on board at Lively, where they had arrived several days previous, having deserted their brig in Smith's Sound, about thirty miles to the northward and eastward of the furthest point reached by us, and, by unprecedented energy and determination, made their way down in boats and sledges.

In five days after my last communication to the Department (a copy of which, as well as of all others since leaving, are here with enclosed), we succeeded in "boring" a passage through the middle "pack" of Baffin's Bay, and in reaching

Lively, where we were detained until the 18th ultimo, coaling, watering, and preparing to receive our increased numbers. Sailing on that day in company with the *Arctic*, we have, without any incident worthy of note, returned all in health.

No traces whatever of Sir John Franklin or his party were discovered.

Our vessels have both proved themselves all that could have been desired, particularly the *Arctic*, she having, in addition to her steam-motive power, the qualities of a good, weatherly, moderate-sailing vessel. They have been pretty severely nipped and chafed by the ice, but are generally in good condition.

I enclose a list of the officers, men, and crews of the *Release* and *Arctic*, as well as of Dr. Kane's party.

As the crews of both vessels were shipped with the understanding that they were to be discharged on the return of the expedition to the United States, I respectfully request authority from the Department to pay them off.—I am, very respectfully, your obedient servant,

H. J. HARTSTENE,

Lieutenant commanding Arctic Expedition.

Hon. J. C. DOBBIN,

Secretary of the Navy, Washington, D. C.

List of the Officers and Crew of the United States Barque Release.

H. J. Hartstene, Lieutenant commanding.

James Laws, acting assistant surgeon.

Wm. S. Lovell, acting master.

Jos. P. Fyffe, passed midshipman.

Van R. Hall, boatswain.

Charles Sever, captain's clerk.

Thomas Franklyn, purser's steward.

Richard M. Clarke, surgeon's steward.

Robert Bruce, boatswain's mate.

William Smith, do.

David Batey, captain of foretop.

Charles Johnson, captain of maintop.

George Devys, gunner's mate.

Thomas Ford, gunner's mate.

William Phinney, quartermaster.

Joseph Morris, do.

Benjamin Moore, sailmaker's mate.

Charles Williams, carpenter's mate.

Francis Taylor, captain of hold.

William Henry, ship's cook.

Louis Lawrence, seaman.

Andrew Lawson, do.

Byron Potter, do.

John Haley, do.

John Smith, do.

George Bidwold, do.

PASSENGERS.

Passed Assistant Surgeon E. K. Kane, United States Navy.

Belonging to Dr. Kane's party.

John W. Wilson.

Amos Bonsall.

I. I. Hayes.

August Sontag.

Henry Goodfellow.

William Morton.

Geo. Stephenson.

Thomas Hickey.

List of the Officers and Crew of the United States Steam-brig Arctic.

Charles C. Simms, Lieutenant commanding.

John K. Kane, acting assistant surgeon.

Watson Smith, acting master.

Harman Newell, 1st assistant engineer.

William Johnston, acting 3d assistant do.

John Van Dyke, purser's steward.

Abraham W. Kendell, surgeon's steward.

Samuel Whiting, acting boatswain.

William Richardson, acting carpenter.

William Carey, boatswain's mate.

John Bilan, do.

William Grover, quartermaster.

Waiter Wilkinson, do.

Richard Hartley, captain of hold.

Joseph Brown, ship's cook.

John Fox, 2d class fireman.

John Gilbert, do.

George Tyler, do.

John Thompson, seaman.

John Brown, do.

George Price, do.

James Botsford, do.

PASSENGERS BELONGING TO DR. KANE'S PARTY.

Boatswain Henry Brooks, U.S. Navy.
James M'Gary.
George Riley.

William Godfrey
Charles Blake.
George Whipple.

No. V.

*Report of a Journey by Messrs. Bonsall and M'Gary to establish Provision
Depôts along the Greenland Coast.*

SIR,—We have the honour to submit the following report, taken from the journal and field-notes of our party:—

September 20, Tuesday.—We left the ship about one o'clock with the "Sledge Faith" and seven men, and arrived at Coffee Gorge at eight o'clock. As it was low-water, we were unable to gain the land-ice, and encamped on the floe. You accompanied us for the first stage of our journey with the dogs.

September 21, Wednesday.—Started this morning about eight o'clock and travelled until noon, when, as we were about to halt for dinner, we came upon weak ice, which gave way. The after-part of the sledge went down, but the floats prevented it from sinking. In order to draw it out without breaking the ice, we unlashed and took off part of the load. Our thermometer was broken, and some few of the articles were wet; everything else was uninjured. At 2 p.m. we concluded to pitch our tent, as we could not get on the land-ice until high-water; besides, Mr. M'Gary and two of the men were very wet. By 4 p.m. we succeeded in drawing up the sledge, and reloaded for an early start the next morning.

September 22, Thursday.—At 8 a.m. we set off on the land-ice, and at the expiration of two hours found we had travelled only two miles. We then spent two hours in lowering down the sledge and cargo upon the bay-ice, which we found perfectly strong. But by this time the ice had set off from the shore, and four of us were forced to walk about a mile up the land-ice before we found a suitable place of descent. We then travelled about five miles on the floe, when we were stopped by an open crack. We attempted to get on the land-ice again, but, finding that impossible, we started out into the bay, hoping to cross it on the old floe; but this we failed to do, as the crack ran through it to an indefinite extent. We therefore determined to return to the point we had left and await the flood-tide, which would close the crack. We encamped near the land-ice, with a strong wind blowing from the S.E. accompanied by snow.

September 23, Friday.—This morning Mr. M'Gary started off shore to search for a crossing-place, the ice being not yet closed. He returned at 7 a.m. and reported that the lead was closing, and in half an hour crossed it in perfect safety. We travelled quite rapidly over the smooth ice for two miles, when we came to more thin ice, but by careful search and trial found a place sufficiently strong to bear us. At this point we found an open crack running off shore, and were forced to unship the cargo from the sledge and get it upon the land-ice, on which we progressed with difficulty about a mile, when we found it necessary to divide our load and transport half of it at a time. In this manner we travelled until 6 p.m., when we encamped on the land-ice, and Mr. M'Gary and one of the men returned about four miles to procure water.

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September 24, Saturday.—Started at 7.30 A.M., and found, after walking a few hundred paces, that we should be able to regain the floe-ice. This occupied us about an hour and a half. The ice was from twelve to sixteen inches thick. Encamped at 5 P.M. about ten miles from Chimney Rock.

September 25, Sunday.—We did not start till 9 A.M., as it was Sunday. We then pushed forward toward Cape Russell over old floe-ice well covered with snow and quite smooth. About 2 P.M. we made the cairn, and proceeded to cache the pemmican (bag No. 5, weight 105 lbs.), also one-half of our meal and half a bag of bread, at the base of the rock on which the cairn is built, being about one thousand paces from a prominent cape, and the same distance from the cape west of it. Encamped near the cliffs at 4 P.M., having travelled about fourteen miles. We took no observations, the weather being cloudy.

September 26, Monday.—We started at 7.30 A.M., and, having smooth ice, made about two and a half miles per hour. The coast has nearly the same trend as that of yesterday (E.S.E.) About 11 A.M. we discovered a deep gorge running into the land, and stopped there a short time to find water, but without success. We named this spot "Sunny Gorge;" as its course was S.E. and N.W., the sun shone directly upon it, while at the same time we were in the shadow of the cliffs. We discovered the remains of five Esquimaux huts, which, though very old and in ruins, appeared to be larger and better constructed than any we had seen before. We also met with our first bear tracks to-day; but they were apparently a week old. This morning our cook shot a silver-grey fox near our tent. During the night the wind blew quite strong from the E., and this morning changed to N.E. with a light breeze; but I took compass-bearings and approximate distances of the most prominent objects along the line of coast. At noon when we halted for dinner we were forced to melt ice to drink, as we were very thirsty. At 4 P.M. we came to some running water in a gorge,—the first we had seen since we left Glacier Bay. From this point we discovered an island or point, apparently about six miles in length, running out from the cliffs, and partly forming the coast of a bay. After making preparations for repelling the bears in case they should discover our pemmican, we turned in, having travelled from sixteen to eighteen miles.

September 27, Tuesday.—Set off at 8 A.M., and walked about twenty miles over the bay toward yesterday's station, where we arrived about 3 P.M. From this point the land changes, from the high cliff of limestone and greenstone, to rolling hills of red granite, which trend a little to the S. of E., and are intersected by small bays and islands. We have been looking out, but without success, for the dark mass seen by you from Cape George Russell when on the first travelling party. Encamped about 4 P.M., having made about fifteen miles.

September 28, Wednesday.—Left our encampment about 8 A.M., and pushed on in the face of an easterly snow-storm, which fell so thick that we could not see the coast-line more than a few yards ahead; but, having taken bearings on the preceding day, we were not at a loss. Last night, owing to the thawing of the ice, our buffalo-skin became very wet, which rendered us extremely cold and uncomfortable. In the afternoon we arrived at a suitable point for making the second cache, and deposited the pemmican bag No. 6, weighing 110 lbs., and half a bag of bread. We built a cairn upon the rock above the cache, to mark the spot, which bears from the centre of the cairn E. by N. $\frac{1}{2}$ N. distant ten paces. It being late, we pitched our tent, having travelled this day about fourteen miles. By placing some loose articles under the buffalo, we were much more comfortable than on the preceding night. The temperature was so much lower than we had

yet experienced, that our stockings froze to the soles of our boots; yet none of us were frost-bitten.

September 29, Thursday.—We could not set out till 8 A.M., owing to the sickness of two of our men, who got better, however, after travelling an hour or two. About twenty miles above our encampment the glacier comes down to the shores of the sound, covering the land completely, and extending as far as the eye can reach toward the N. by E. The weather was extremely cold. We made about twelve miles to-day.

September 30, Friday.—It was clear and very cold all the day. Mr. M'Gary, myself, and two of the men, were slightly frost-bitten. We passed almost parallel with the glacier (about N. by E.); but, as the refraction was very great, we were not a little confused as to our coast-line, though we thought we saw dark land to the northward. At 4.30 P.M. we halted and pitched our tent, having travelled eleven or twelve miles. As the sun went down the cold increased, so that it was nearly morning by the time we felt comfortable.

October 1, Saturday.—We started at 8.15 A.M., and travelled N. by E. over very heavy floe. The snow, which had been gradually deepening, was about six or seven inches in depth, and very cold to our feet, although none of us were frost-bitten to-day. The cold, being so intense, induced us to halt earlier than usual, having travelled only about ten miles. We have had but little encouragement to-day, as we can see nothing but glacier as far as the eye can reach. The men complain of cold at night, and we get but little sleep. Owing to the severe cold, I found it impossible to write my log: I wrote it this morning in the sunshine. To-day we burned the last of our alcohol, though we used it with the greatest economy. We attempted to burn rum, but found it was not sufficiently strong. We then had recourse to the staves of the cask and other small pieces of wood, together with a few pounds of lard. We progressed about ten or twelve miles to-day, having struck a lead of smooth ice which ran in our course.

October 2, Sunday.—We found the travelling much better than yesterday, as we followed the lead of last evening. We are still looking out for land to the northward, none being in sight even from the highest bergs. The nights become sensibly colder as we advance, and lately some of us have suffered considerably from cramp in the limbs, though no serious cases have occurred. Mr. M'Gary, who has not slept for several nights, is now quite unwell. We made to-day about twelve miles, having had comparatively good travelling, although the snow is deep.

October 3, Monday.—Last night we slept more comfortably than we had done for some time. This morning an easterly gale sprung up directly off the glacier, which blew the snow so much as to make the travelling impracticable; and, my frozen feet rendering me quite lame, we resolved to remain in our tent. Mr. M'Gary and two men walked to a berg about two miles distant, and in two hours returned with the news that they saw land at a long distance to the north of us.

October 4, Tuesday.—This morning, the gale having subsided, we prepared for an early start. We dug our sledge out of the drift and made for the land sighted yesterday. The wind, having packed the snow, made it more firm, and rendered the travelling easier. About 3 P.M. we halted to melt snow for drink, but the high wind made it difficult to keep the fire burning. While some of the party were cooking supper, others climbed a high berg, and on their return reported better ice than we have had for some time; also, from present appearances a fair prospect of making land in two days more. We have advanced about ten or twelve miles. The wind is east, and weather cloudy. All our fuel is expended.

October 5, Wednesday.—Started about 7 A.M.; but, as I lost my watch-key, we could only guess the time by the sun. About 11 A.M. we came to an almost impenetrable mass of bergs, and were soon stopped by an open crack running nearly E. and W. for several miles in each direction from our position. It was about thirty fathoms wide. We sent parties out to seek a crossing; but, finding it was a tide-crack extending probably many miles, we concluded to await the turn of the tide, which would close it. On the opposite side we could discern nothing but high icebergs with narrow passages between them choked up by hummocks and squeezed ice. Finding it impossible to make land to the eastward, we attempted to cross to the westward; but, seeing no change in the appearance of the ice, we pitched our tent and turned in, as it was near sunset. We begin to fear we shall be obliged to return to the other side of the glacier, owing to the bad appearance of the ice; besides, as the men are growing weaker, and are still affected with cramp, they are less able to draw the sledge over the increasing difficulties of the way. With all our toil, we made this day but eight miles in a straight line.

October 6, Thursday.—The crack closed last night. To-day we rose early, crossed it about 6 A.M., and commenced forcing our way among hummocks and squeezed ice. After twisting about among the bergs for two or three hours and advancing only about a mile, we came to a full stop; and, as we found it impossible to proceed, we left the sledge. Five of the party started on foot through the ravines between the bergs, crossed three more cracks, but found great difficulty in walking, on account of the broken character of the ice. After travelling about two miles through the gorges we ascended to the top of an iceberg, whence a desolate scene burst upon our view. Before us, at the distance of twenty-five or thirty miles, the land, which runs about W.N.W. and E.S.E., assumed the character of the coast near Cape Frederick VII.;* but between us and the land was a solid mass of bergs having narrow passages between them similar to those we had just passed through. In taking the bearings of the most prominent points with the sextant, I froze my fingers severely. Finding it impossible to progress further in our course toward the land, we turned back very reluctantly, as our near approach to it had raised our hopes. In the meantime Mr. M'Gary had been in another direction, but returned equally unsuccessful. We therefore concluded to make for the first land on the south side of the glacier and deposit the pemmican. After hard labour we regained the crack we had crossed this morning, but, finding it open, we were forced to wait till it closed. This morning our cook wounded a fox, which gave two of the men a long chase before they secured it. Baker is quite unwell to-day.

October 7, Friday.—Last night the crack closed, but we feared to cross it in the dark. This morning we rose about five o'clock, but were obliged to wait till eight, as the crack was not sufficiently close to admit of our crossing. We had just passed over it when it began to open, and before we had finished lashing our sledge it had opened several feet. About 9 A.M. we pursued our way outside of the bergs on the south side of the crack, and found the ice much better for travelling. We headed directly for the point on the south side of the sound. Encamped about 4 P.M., the weather excessively cold. Some of the men complain of frozen feet, Baker is much better.

October 8, Saturday.—Started this morning at sunrise and travelled fast over

* This name was applied by my predecessor to a supposed cape. We retained the name during our early parties for a large headland in lat. 78° 55' 8", long. 68° 50'.—E. K. K.

the floe, which was comparatively smooth. It was so cold that we could not stop to rest, and for the same reason took a very short time for dinner. Yesterday we took more of the alcohol from cache, as the gallon we first took had been consumed. I think we lost both rum and alcohol by evaporation. This evening I opened the thermometers which were sent for deposit at the cache, and found, much to my regret and disappointment, that they were both broken, although they were packed securely. I had my nose and two of my fingers frozen to-day. I was not aware of my nose being frozen until I was informed of it, when I had it rubbed with snow, which seemed to make it worse. Mr. M'Gary's feet were frozen again to-day. A strong breeze sprung up from the E. about 7 P.M. We made about fifteen miles.

October 9, Sunday.—The wind ceased during the night, and this morning we started at sunrise. We had smooth ice, and made good speed. About 10 A.M. a white fox came in view. I shot him without injuring the skin. We had hoped to make the cache-point this evening, but at sunset we were still several miles from it; and, as it became very cold, we concluded to encamp. We travelled about seventeen miles to-day.

October 10, Monday.—We started at 7 A.M.; and, as the sun had not yet risen, the cold was so severe that we could scarcely prevent our faces from being frozen. About 9 A.M. we made the point of the island, to which we carried our bags of pemmican and our heaviest stores, which we covered with the largest stones we could find, to prevent the animals from attacking our meat. This was laborious work, as the stones had to be carried some distance up the hill. After stopping up every crevice a fox could work through, we covered it with loose stones and moss. While we were employed in building the cache, Mr. M'Gary was engaged in making a stew of one of the foxes we had shot; in which operation he froze his finger severely. We built the cairn on a point of rock thirty paces E. $\frac{1}{2}$ S. from the cache, and at the same distance from the point of a remarkable rock on the highest part of the island, bearing S. by W. $\frac{1}{2}$ W. There were two small islands about two thousand paces from the cache, the larger bearing E. by N. $\frac{1}{2}$ N., and the smaller E.N.E. Owing to the severity of the cold, I was unable to take sextant-bearings of these points; but, from the situation of the island and positions of the cache and cairn, as well as the fixed points, it could readily be found. As it was nearly night by the time we had finished our cache, we concluded to encamp on the island. This was the coldest day we had yet experienced.

October 11, Tuesday.—After a cold and sleepless night, we set out very early, and travelled fast, in order to reach the cache where we had left half a bag of bread. We arrived there after a hard day's travel of about twenty-five miles.

October 12, Wednesday.—Started very early this morning, and travelled fast, stopping at noon only, to melt snow, as we were all very thirsty. Made about fifteen miles this day.

October 13, Thursday.—Set out early, and walked fast, in order to gain a stream of water we had passed on our outward journey. We reached it about 10 A.M., but found it frozen solid. We then took some moss, and melted enough for a drink. We hurried on, hoping to meet Cape Frederick before nightfall; but in about an hour we came to an open crack, which checked our progress for the time, as we tried in vain to get on the land-ice. We waited until after dark; but, as the crack did not close, we pitched our tent. Just then a white fox came in sight, which was soon shot, making the fifth since leaving the vessel. The day closed with a high wind and a snow-storm. We made about twelve miles.

October 14, Friday.—Rose this morning at peep of day, crossed the crack,

which was now closed, and pushed on for Cape Frederick. We were arrested by cracks and bay-ice every half mile; and, as this was all solid floe when we passed it in going out, there must have been a strong gale here since then. Opposite Sunny Gorge we came to an open crack, which delayed us about half an hour; but, finding a loose piece of ice sufficiently large to bear us and our sledge, we ferried ourselves over without difficulty. About camping-time we arrived opposite to our first cache, but were unable to get upon the land-ice, owing to the low tide. In passing the place where we cached the fox on our outward journey, we found foxes and ravens had eaten the carcass, leaving scarcely a vestige of it. We made to-day about fifteen miles.

October 15, Saturday.—Early this morning, the tide having risen, we endeavoured to secure some bread from the cache. This we accomplished by one man standing upon the shoulders of another. We immediately set off, but were soon stopped by a crack, which we crossed about a mile further up. We then came to the bay, and, steering direct for the opposite cape, would have crossed without difficulty; but, as we neared the cape, the ice was broken up, and about sunset we came to a crack about one hundred fathoms wide, which it seemed impossible to cross; but in about half an hour we succeeded in detaching a large piece of ice, on which we ferried ourselves over as before. We travelled on over the smooth ice till near dark, when we came to another crack, which we did not attempt to cross, but pitched our tent and turned in. On the return of flood-tide the cracks closed, and, by sending a man ahead to try the strength of the ice, we succeeded in crossing fifteen cracks in the space of four or five miles. We encamped for the night, having travelled about twenty-five miles.

October 16, Sunday.—We set off at daylight, determined, if possible, to reach the vessel to-day. We headed directly for the cape of the bay in which our vessel was lying. About two hours after starting, we discovered an object nearly three miles from us in-shore, which on a nearer approach proved to be a tent. Before reaching it, we discovered it to belong to our commander, who, with one of the men and the Newfoundland dogs and sledge, was coming to meet us; and we were very glad to see them after our long absence. We soon had a warm drink,—a luxury we had not tasted for a week. The party then took upon our sledge the tent and baggage of the dog-sledge; and leaving the man with them, I returned to the vessel with you, after having fallen into the water,—no very pleasant affair with the thermometer below zero. We arrived at the vessel at half-past twelve o'clock, and Mr. M'Gary and party joined us about half-past three.—We remain, your obedient servants,

JAMES M'GARY,
AMOS BONSALL.*

To Dr. E. K. KANE, *Commanding Arctic Expedition.*
BRIG ADVANCE, SMITH'S SOUND, October 30, 1853.

* Compiled by me from the original field-notes.—A. BONSALL.

Journal of a Travelling Party into the Interior eastward from Rensselaer Harbour.

Party consisting of Mr. Wilson, Dr. Hayes, and Hans, the Esquimaux.

BRIG ADVANCE, March 29, 1854.

To Dr. E. K. KANE, Commanding American Arctic Expedition.

The subjoined journal is a copy from a rough note-book kept daily, and the accompanying chart is projected from the field-notes.—Respectfully submitted, your obedient servant,

I. I. HAYES, Surgeon to Expedition.

September 8, Thursday.—Left the brig at 7 P.M., equipped by order as follows:—two buffalo-robos sewed together and covered with India-rubber cloth, to serve as a tent; thirty pounds of pemmican, two of bread, one of meat-biscuit, one of chocolate, and one of coffee, constituted our stock of provisions. Each man carried a tin-cup strapped to his waist, an extra pair of boots, (Esquimaux), a Lady Franklin gun, and a Danish rifle. The tent weighed twenty-six pounds.

Our course lay due east, but from this we were obliged to deviate on meeting the inlet at the termination of the bay. We followed the course of a ravine, which afforded us a more level track, and encamped about eight miles from the brig, beside a small stream, which opened into a plain half a mile long by about a hundred yards broad, and covered with rich grass. One hare was seen during our march, and I observed a few single specimens of saxifrage still in full bloom. A heath—*Andromeda tetragona*—which grew luxuriantly about the rocks and protected places afforded us a plentiful supply of fuel; and, had it not been completely saturated with snow, would have made us an admirable fire. At 11 P.M. our thermometer showed $+10.4$ Fahrenheit.

September 9, Friday.—Set out at eleven o'clock, having first ascended the highest bluff within reach, from which I could sight the headlands of the bay, for the purpose of connecting our route with them, and with the plateau beyond. We therefore travelled as nearly due east as the winding path among the rough syenitic bluffs would allow. We reached the base of the greenstone debris, and ascended it, at an angle of from 25° to 30° , to an elevation nearly equal to that of the headland before mentioned. A half mile brought us to the termination of a talus, which seemed to be succeeded by another beyond, and above a partially broken-down escarpment. We encamped in a gorge at 8.30 P.M., having travelled by rude estimate fifteen miles. A hare shot by Mr. Wilson afforded us a good supper, cooked Esquimaux-fashion by Hans, on a flat stone, with the burning rags from around our pemmican. Thermometer at 3 P.M., $+23^{\circ}$, at 11 A.M., $+16^{\circ}.2$.

September 10, Saturday.—Ready and on our march at 10.30 A.M. A heavy fog which hung over the bay obscured the headlands, and prevented our connecting our position with that of any known point. We were, I supposed, at least two points to the south of east from the vessel. We ascended to the highest point of the plateau by a succession of steps, three in number, which brought us to an elevation one-third higher than the terminating headland. From this point we could see the syenites we had just left again cropping out much less bluffly, and terminating the table-land to the eastward by a continuous line, trending generally north-west and south-east. The opposite shore of the sound could be distinguished by high conical peaks; and a headland of the eastern shore was distinctly visible, with its table-land, which ran back until it was lost in the syenitic outcropping, which terminated the eastern view by a range of long bluffs,

trending apparently north and south. To the south-east and south was visible a long continuous mist-bank, reaching 4° or 5° of altitude, and terminating below in vertical lines, alternately light and dark. This I supposed to be a great internal glacier, from fifty to sixty miles distant. Its upper line or surface was lost in the mist, and could in no place be determined. We reached the ridge to the eastward at 9 P.M., and encamped. As neither water nor fuel could be found, we were obliged to content ourselves with raw pemmican and a little brandy,—a meal by no means unpalatable after a hard journey of at least twenty miles.

September 11, Sunday.—Our route lay due east over a gently undulating country. Nearly every two miles we found a lake or pool, from which we procured water by breaking ice six or eight inches thick. The travelling was more tedious than over the unbroken plain of yesterday, as we had often to jump from rock to rock. But a single high bluff was seen. It was hemispherical, and from one hundred to one hundred and fifty feet high. Having made about eight miles, we encamped at 8 P.M. Thermometer at midnight, $+9^{\circ}.5$. I found it impossible to lay down our track by a series of triangulations, as at the distance of a mile one point could not be distinguished from another. Many reindeer and fox tracks were seen during the day, but no living thing passed within view.

September 12, Monday.—Set out at 10.30 A.M. Our route growing more interrupted by fissures and gorges, added to the difficulties of travel. On one occasion I tumbled headforemost down some rocks; but happily the tent which I was carrying saved me from injury. The stock of my gun and my pocket-thermometer were broken. Hans expressed a determination to proceed no further in our present course. He pointed east, exclaiming, "No good;" "Esquimaux none;" and, looking west, he said "Sloopkie," and started in the latter direction. On ascending the highest point in our vicinity, we discovered a river about three miles distant, running nearly north-west. This we showed our Esquimaux friend, whereupon he set off immediately and reached its banks at 8 P.M.—half an hour before we arrived. We travelled about ten miles to-day, and during our journey found the most luxuriant growth of andromeda which we have met with in North Greenland. Besides serving for fuel, a quantity of it spread under our tent made a much softer bed than the stones.

September 13, Tuesday.—Hans having expressed his unwillingness to go any further, we thought it best to leave him in charge of the tent, &c., and, without the encumbrance of baggage, to proceed up the river in order to find its source, which I hoped to do in one day's travel. I felt certain that the glacier we had sighted on the 10th could not be very distant. I supposed the river to be a continuation of that crossed by Dr. Kane with his first full party. About a mile from the tent we came to a fork in the river, one branch of which ran north-west, the other west. We followed the latter, and after ten miles travel we came to a succession of terraced plains, occasionally appearing on either side of the stream, generally covered with rich grass, and marked in every direction by reindeer-tracks. We saw five of these animals feeding along the borders of the stream. These meadow-lands (for such they really seemed) indicated by their vegetable life a temperature much warmer than that along the coast, and in their apparent richness contrasted strangely with the desolate scenery around. This plain was at least two miles in diameter and about five in length. From this point we obtained the first sight of the glacier, which is about fifteen miles distant. We could see its upper surface in one continuous and unbroken line, through an arc of more than 90° . When within about half a mile of the glacier,

a beautiful meteor fell directly before us, revealing in the dim twilight the real character of the huge mirror beneath us. From the glacier rose loud reports like distant thunder. It was nearly midnight when we reached its base, and we immediately undertook its ascent. Along the base, to the height of fifty or sixty feet, was a bank of snow continuous with the face of the glacier, and rising at an angle of 30° . This we ascended without difficulty; but the smooth surface of the ice baffled us in our attempts to scale it. I now wished for our tent, that we might rest here the following day and make further attempts to reach the summit of the glacier. We were already tired and cold.

September 14, Wednesday.—As constant exercise is necessary in order to keep warm, we set out on our return, and reached our encampment about noon, after a walk of twenty miles. The trend of this glacier is north-north-east, its altitude above the general level of the country from three hundred to four hundred feet, and the distance between its crevasses from twenty to forty feet. These crevasses are generally small, being from one to three feet wide, and about the same in depth, and partially filled with snow. The face of the glacier rose, at an angle of about 35° , to an elevation of one hundred and sixty feet, when it rounded off as it gradually approached the *mer de glace* above.

September 15, Thursday.—Having accomplished the object of our journey, we determined upon returning to the vessel, although we had been absent less than half the allotted time. We kept our old track until we reached the camping-ground of the fourth night out, when we struck off to the north of east. We saw three deer; but, with all the dexterity of an experienced hunter, Hans failed to approach them near enough for a shot. An old and weather-worn skull of a musk-ox was found during the day's march.

September 16, Friday.—We reached the brig at 3 A.M., after a continuous walk of nineteen hours, during which time we halted but for one meal.

Respectfully submitted,

I. I. HAYES, M.D., *Surgeon to the Expedition.*

Journal of a Party sent out to Deposit a Self-Registering Thermometer at some available point to the northward of Marshall Bay, under charge of Dr. I. I. Hayes.

October 21, Friday.—Left the brig at a quarter-past eleven, the party consisting, besides myself, of Mr. Morton, steward, and John Blake, seaman. A sledge drawn by four Newfoundland dogs carried our tent, buffalo-ropes, sleeping-bags, provisions,—in short, everything practicable and necessary for comfort and convenience in Arctic travelling. Our only extra weight was a keg of alcohol, to be deposited in cache. I carried a pocket-sextant and portable compass strapped to my waist. For the first two miles we found the travelling excellent, over newly-formed ice intermingled with heavy pieces and hummocks. Our load being light, the dogs drew the sledge in a half-trot, causing us to keep up a brisk walk. On meeting with rough hummocky ice, we unharnessed the dogs and drew the sledge ourselves for the next two or three miles, passing Coffee Gorge and camping for the night about five miles beyond. It was the work of half an hour to pitch our tent, unharness our dogs, collect snow for water, and carefully stow our dogs in one side of our tent and ourselves in the other. On opening our provision-bag we were not a little mortified to find our fresh beef and pemmican had been for-

gotten, and were forced to make out with a much less palatable dish than our commander had kindly intended,—a stew of pork and bread.

October 22, Saturday.—Roused Morton and John at six, it being not yet quite light. A pot of coffee and pork-stew constituted our breakfast. By half-past eight we were on our march, and at twelve we halted to melt snow for the dogs opposite to the point to the eastward of Marshall Bay. I took sextant-altitudes of the cliffs, called by Commander Kane Tennyson Monument, stepping a baseline of two hundred yards. The results are:—height of cliffs to top of debris, seven hundred and twelve feet; height of debris, three hundred and fifty feet. Upon a rude estimate, the debris runs out at an angle of forty degrees. At half-past twelve we were off again on a “dog-trot,” keeping a straight course for the outermost point of a large cape, hoping to reach it by noon of the following day. About three o'clock we pitched our tent in the centre of a large old floe, about ten miles from the nearest point of the opposite shore. We were here in full view of the bay, in the centre of which rose the rugged faces of the syenites—the same range crossed in my inland journey in September. Chimney Rock was recognised as the same headland sighted from the plateau in that journey, bearing N. 50° E. By half-past five we were ready to turn in. On unwrapping the thermometer, to my great mortification and astonishment I found it broken,—an accident which must have occurred in the lashing of the sledge. It was, however, most carefully wrapped in woollen, and placed in the centre of the sleeping-bags and buffalo-robes, so that I thought there could be no danger of accident. As I was much interested in the results to be obtained, the defeat was no small disappointment, and the idea of turning back, which appeared the only alternative, no less unpleasant. As endeavouring to obtain sights of the opposite coast-line and make a survey of this was secondary to the other object, I thought that, in the uncertainty of having clear weather, and the great probability that another effort could be made by Dr. Kane to obtain a result so desirable, it would be useless to proceed further at present, except to deposit the keg of alcohol at the first cache made by Messrs. M'Gary and Bonnell near Chimney Rock. This I determined to do the next day. By immersing the broken thermometer in melting snow to ascertain rudely its correction, I found the temperature of the air to be $-21^{\circ} 5'$, the wind, which had been blowing stiffly from the eastward, having nearly subsided. Morton and I had our hands severely frost-bitten during the day,—he in melting snow, and I in carelessly exposing my hands in manipulating with the sextant at Tennyson Monument. Alternate pounding and rubbing brought us off with each a single blister.

October 23, Sunday.—Were ready to start by 8.10 A.M. Morton and I occupied the place of the dogs in drawing the sledge, leaving John in charge of the dogs, tent, &c. We reached the cache at half-past twelve, a distance of fifteen miles. The cache remained undisturbed; but the numerous tracks around, and the efforts made to undermine the pile of stones, showed the necessity of great precaution in depositing provisions. The keg of alcohol was placed at one end of the bag of pemmican, and the cache additionally strengthened. The debris was mostly of limestone, and not extending so high as is common in those already passed. I was very anxious to fulfil the desire of Dr. Kane to obtain a suite of specimens of the cliffs and debris; but the cliffs were difficult to ascend, and, by the time I had reached half way, I found it would be impossible to gain the top without first descending. Specimens of the rock as far as I ascended, were carefully wrapped in paper and marked in series. A stiff breeze was blowing around the point, and, by the time I reached the bottom, I was so chilled that I

felt little like making another effort; besides, I had already gone up by a gorge to take a look, without doing any good, and it was growing late. Sextant-altitudes were taken of the top of the greenstone and the debris, with a stepped base of two hundred paces, which gave severally six hundred and three hundred feet. Started back at three o'clock, a light snow falling. Reached the tent about 7 P.M.

October 24, Monday.—Commenced my journey at 10 A.M., passing over nearly the same track as on the 22d. We made the land-ice, to avail ourselves of the lee of the cliffs against the strong wind, and pitched our tent at a quarter-past three. We found, on unpacking the sledge, that a stanchion and top-bar had been broken. One of the dogs having made his exit at one corner of the tent two nights previously, John soon had us safely fastened in. We ate our stew, drank our coffee, and I smoked my last cigar; after which we pulled into our blanket-bags.

October 25, Tuesday.—Were ready and on our way to the brig by 9.45 A.M., keeping along the lee to Coffee Gorge. Dr. Kane had previously called my attention to a set of marking-stones, the phenomena of which he explained satisfactorily. As soon as we sighted the vessel, the dogs kept us on a half-run until half-past one, at which time we reached it.—Very respectfully,

I. I. HAYES, Surgeon to Expedition.

To Dr. E. K. KANE, Commanding Arctic Expedition.

*Report of the Advance Party, and Attempt to Reach the Northern Shore
in charge of Henry Brooks.*

RENSSELAER HARBOR, April 4, 1854.

SIR,—I have the honour to submit the subjoined abstract from our field-notes:—

March 19.—This day we left the brig at 1 P.M., and travelled in a northerly direction three miles, over very good new floes nearly parallel with the north-eastern shore of Rensselaer Bay, and about two miles distant from it. The sledge dragged so heavily that at times it became immovable except by a standing pull. This was probably the effect of the intense cold, which causes the runners to adhere to the snow. Mr. Brooks desired me to return to the brig and inform you of our slow progress. At half-past one o'clock you arrived with five men from our camp, bringing the big sledge as a substitute for the Esquimaux sledge, and the large India-rubber boat with two canisters of pemmican, which added greatly to our load.

March 20.—We started at 10 A.M., travelling over good ice; but the sledge dragged so heavily that Mr. Brooks first ordered the boat, and afterwards the two canisters of pemmican, to be taken off. The latter were deposited on the south side of a hummock, on the top of which was placed a red flag. I took the bearings of the neighbouring icebergs and headlands, to aid in finding this spot again. To-day I noted two large icebergs which I saw last summer to the south of their present position. About the middle of August one was situated near Refuge Inlet, the other near Bedevilled Reach, (Force Bay,) and about four miles from shore. Mr. M'Gary and I ascended the latter in company with you. It is now situated about four miles from Coffee Gorge, and two miles from shore.

This afternoon we encountered the chain of icebergs which extends without interruption from the north point of Bedevilled Reach to first cape beyond Chimney

Rock, or perhaps even further north. These icebergs, which are very numerous, are generally long and flat, and situated close together. We crossed this chain from S.S.E. to N.N.W., and north from the north headland of Rensselaer Bay, its mean breadth being about three miles. These icebergs run parallel to the land except where bays are formed, in which case they stretch directly across from one headland to the other. Single icebergs are scattered on both sides of the chain to the distance of six miles.

To-day we travelled due north only two miles and a half; but following, as we did, a very tortuous road between hummocks and icebergs, our walk was increased to more than five miles. The latitude of our camp this night was $78^{\circ} 44'$; and the magnetic variation to-day was 111° S.W.

March 21.—A thick fog this morning made it impracticable to start before 10.30 A.M. We continued our course due north, winding round icebergs and hummocks. At noon I ascended an iceberg about eighty feet in height; the horizon was still obscured by fog, but as far as the eye could reach I could discover no level floes. The icebergs, moved by wind or tide, are driven against the floes and break them; which appears to be the cause of the formation of hummocks. The snow being in many places above our knees rendered the walking very fatiguing. In the afternoon we found the hummocks so high that we were forced to divide our load and draw only half of it over them at a time. By this arrangement we progressed but one mile and a half, although we walked more than four times that distance. At 6 P.M. the fog partially disappeared, when Mr. Petersen and I climbed to the summits of some icebergs, from whence we could see nothing but hummocks in every direction, though to the N.N.E. they seemed rather lower, and occasionally interrupted by small level floe-pieces.

March 22.—On setting out to-day we altered our course from due N. to N.N.E., crossing heavy hummocks during the first two hours. At 11 A.M., the hummocks becoming less, we again changed our course to due N., dragging our sledge over the deep snow which had accumulated in the ravines. In the afternoon we travelled over good new floes interspersed with hummocks, at one of which we found a seal-hole covered with thin ice. About 4 P.M. the fog became so thick as to conceal the land. We travelled by compass until 7 P.M., when we encamped in lat. $78^{\circ} 49' 5''$, being four miles due north from our last station.

March 23.—This morning, seeing nothing but hummocks in our course, we took a N.W. direction over a very old floe, which made the sledging exceedingly heavy. At noon, after crossing some high hummocks, we came to another old floe, the extent of which could not be discerned on account of the fog. Here the sledge was so obstructed by snow that at times it could only be moved by a standing pull. By 4 P.M. we had crossed this floe, the diameter of which is about two miles. On its northern side it had come in contact with a new floe having tables seven feet thick, with sharp edges. The mean level of the old floe was about six feet higher than that of the new one. The remainder of the day we had a good road on new floes, but, having seen no land since morning, we were forced to pursue our course by compass. In the afternoon a fine breeze sprung up from the N.E., accompanied by light snow. We encamped at 7 P.M.

March 24.—Baker was too sick to walk, and as it still blew a strong breeze from the N.E., we resolved to lay to. No land visible.

March 25.—We set out this morning at 9.20 A.M., and, after crossing some hummocks, travelled to the northward on good floes. I found our latitude at noon, by the artificial horizon, to be $78^{\circ} 56' 8''$; the dead reckoning for the same hour being $78^{\circ} 56' 0''$. The north headland of Rensselaer Bay bore exactly south

about fifteen miles distant. At 1 P.M. we reached a ridge of hummocks, one of which Mr. Brooks, Mr. Petersen, and I ascended, and found they extended round the horizon from S.S.W. through N. to N.N.E. The western shore could be traced to a point bearing north from us, where it disappeared, leaving an open space of about 50° on the horizon, at which point the lowlands on the eastern side of the bay commenced. The west land appeared very high to the W. by S. and W. from us, but a fog near shore disclosed only the tops of the mountains. A little to the N. of W. it becomes low, and apparently more distant; to the W. by N. it appears dark, and therefore must be in shadow at 1 P.M., which makes the trend of the coast there W. of N. and E. of S.; but it is possible that it is only the mountain-wall forming the western boundary of a glacier, which seems here to descend into the sound. From W.N.W. toward N.W. the land increases in height, and appears to be much traversed by ravines and valleys, judging from the black lines of shadow which interrupt the coast-line in many places, but which was greatly distorted by refraction. On the east side, at the point where the Esquimaux hut is situated, the land could be distinctly seen south of Force Bay, an indentation of which forms a large bay. Rensselaer Bay bears a little W. from S., and the mountains which lie between it and Glacier Bay (which bears S.E.), appear dark and lofty. The middle of Marshall Bay bears a little S. from E. From this point toward the N.E. the land becomes gradually lower till it disappears in E.N.E. This portion of the eastern shore was not sufficiently distinct to take exact bearings.

In the afternoon we crossed with difficulty some old floes and hummocks. At 3 P.M. we found good new floes leading us toward the N.N.E. along the line of hummocks. We encamped at 7 P.M., having travelled seven miles in a northerly direction.

March 26.—We continued our journey N.N.E. along the hummock which run without interruption nearly in a straight line extending N. and W. to the boundary of the horizon. It blew a strong breeze from the north, which in the afternoon increased to a light gale and compelled us to lay to, at 2.30 P.M., having advanced on our journey two and a half miles.

March 27.—This morning we started at 11.30 A.M., against a moderate north wind, which had blown very strong during the night. As the thick weather did not permit us to see more than a mile ahead, we continued to follow the edge of the ridge of hummocks. These hummocks consist of pieces of ice from one to two feet thick, having sharp edges, and piled up from ten to fifteen feet high. Single piles sometimes exceed thirty feet in height, and when seen at a distance have the appearance of icebergs. Occasionally higher ridges are seen running nearly parallel to each other and at right angles to the outer edge of the hummocks. They seem to have been formed by the meeting of floes which have been drifted N.N.E. and S.S.W. This would indicate that two currents met here coming from opposite directions. Near the middle the sound seems to be entirely free from icebergs; we passed not a single one since the 23d of March, and toward the W. and N. there were none in sight.

We could see no land to-day; the fog increased so much that we were obliged to halt at 3 P.M. in lat. $79^{\circ} 4'$, only one mile and a half to the N.N.E. from our last camp.

March 28.—We were forced to lay to during the entire day, owing to thick weather, and a strong breeze from N. by E. which blew in squalls.

March 29.—This morning was clear and very cold, with a light breeze from the north.

On ascending some of the highest hummocks, Mr. Petersen and I failed to perceive a single opening in their chain, which still extended to the N.N.E. Nearly in the same direction a faint white line could be discerned near the horizon, which was probably the Great Glacier, elevated by refraction.

We were at this time about thirty miles from the opposite (west) shore; and, as the limit of our outward journey was the second of April, it was obvious we could not reach it; for we had now only four days left, and very little can be accomplished in that time among these hummocks. Mr. Brooks, therefore, gave orders to return to the brig. We started at 11.30 A.M., and, after crossing some hummocks, travelled S.S.E. on a good new floe five miles in diameter. This course was chosen with the intention of crossing the chain of icebergs and hummocks which runs parallel to the land further north, and then to take the smooth land-ice (ice-foot) for the rest of our journey; but at 4 P.M. we were stopped by a very old floe, the surface of which appeared to be covered with old rounded hummocks about ten feet high. The spaces between them being partially filled with deep loose snow rendered the travelling very difficult; but we soon reached a new floe, which afforded a good road. We halted at 8 P.M. between hummocks at the south end of the floe, having travelled nearly S.S.E. about seven miles.

March 30.—This morning Mr. Brooks, Mr. Wilson, Baker, and Peter, were unable to walk, on account of frost-bites. Mr. Brooks sent me to the brig, accompanied by Ohlsen and Petersen, to inform you of the condition of the party. We started at 10.20 A.M., and arrived on board at 11 P.M., having walked nearly south about thirty miles.—Respectfully submitted, your obedient servant,

A. SONTAG, *Astronomer to the Expedition.*

Report of Surgeon upon Condition of Rescue-Party, March, 1854.

To E. K. KANE, U.S.N., *Commanding Second American Arctic Expedition.*

SIR,—I have the honour respectfully to submit the following report of the state of health on board the Brig *Advance*, agreeably to your order:—

Of the six men left on board at the time of your departure five were invalids. Messrs. J. Carl Petersen and August Sontag had, in addition to the fatigue of their long journey, premonitory symptoms of scurvy. Mr. Goodfellow, G. Stephenson, and G. Whipple, had all suffered more or less from scorbutic attacks during the winter, and from which they had not yet recovered. The two latter were, however, able, and did render efficient service to the sick after your return,—Stephenson as nurse, and Whipple as cook.

Mr. Bonsall was the first to arrive at the vessel. He came about two hours in advance of the remainder of your party. From him I learned you were advancing, and that he was sent forward by your orders to give directions for the reception of the sick.

The necessary preparations being completed, I went out on the floe to meet you. Messrs. Brooks and Wilson, J. T. Baker, and Pierre Schubert, lay on the sledge sewed up in buffalo-robos and other furs. The remainder of the party were drawing the sledge. As they passed me, I was startled by their ghastly appearance. They gave me not even a glance of recognition, and when I hailed them they met me only with a vacant, wild stare. Their persons were covered over with frost; from their beards were suspended large lumps of ice; their

tread was slow and feeble ; and it was a sad sight to see what had three days previous been a party of strong and vigorous men now all bent down as with the weight of years.

For sixty-six hours they had been constantly on foot and exposed in the low temperatures of from 35° to 50° below zero. They had had no rest since leaving the vessel. The loss of sleep, the constant exposure, the depressing effects of the extreme cold, and the great fatigue consequent upon their long journey, had produced alarming prostration. They were almost to a man delirious. Keeping the direction of the vessel as if by instinct, they knew of nothing that transpired. When they arrived at the ship, and when you gave the order to halt, they all dropped the lines and made for the ship's side, the same instinct directing them to their beds.

There was therefore some difficulty in getting force enough to attend to the sick, and it was with a little delay that they were carried to the upper deck, where they were properly allowed to remain some time before taking them into the warm air of the cabin.

Having placed them in their bunks, that had previously been fitted up with as much care as possible, dressed their wounds, and attended to their present wants, my attention was directed to the remainder of the party. I found they had rolled into their bunks "booted and spurred" just as they had come in from the ice, and were all now fast locked in a heavy sleep, from which it seemed impossible to awake them ; and, indeed, I made no effort. With them, as with the wounded, what they most needed was rest and quiet.

Reaction soon commenced. What had before assumed only the form of the simplest mental aberration now broke out in raving delirium, and for two days the ship presented all the appearances of a mad-house. Not an individual of the party escaped, although some were much more seriously affected than others. Many of them seemed to think themselves out on the ice perishing with cold ; and when they at last awoke, most of them had not the least remembrance of what had occurred during the last twenty hours of the journey. Except small doses of morphine, it seemed impolitic to do anything for them at the first onset of their wild raving. The excessive sleepiness had completely overpowered them, and they would only partially arouse at intervals, and give vent to an imploring cry for aid or an exhortation to hurry on.

At last, after twenty-four hours, they began one by one to awake and ask for food. They were in this state for forty-eight hours ; and Mr. Ohlsen, who had been eighty hours constantly exposed, and had travelled not less than one hundred and twenty miles, was unconscious of what was taking place for the greater part of two and a half days. He would ask for food frequently, eat with great voraciousness, and again fall back into a torpid sleep, seeming to recognise while awake nothing but the meal which he was eating. His brain-symptoms were accompanied by strabismus. During his sleep his mind ran continually upon the tent on the ice, and he seemed to think himself pushing forward, guiding the party to it ; conscious still, seemingly, of being the only one who knew where it was.

You were the last one affected, and among the first to recover. After seeing that the sick were comfortably cared for, you lay down in your cot, and I began to congratulate myself that you had escaped ; but after two or three hours I heard you suddenly cry out, "Halloo on deck there !" On going aft to ascertain what was wanted, I received instructions to "call all hands to lay aft and take two reefs in the stove-pipe." As to all hands being now temporarily crazy I had

no further doubts; for I would respectfully submit that your mind might perhaps have been at this moment a little wandering.

At this time the frost-bitten patients are all doing well. They have rallied as well as can be expected in the short time after so great prostration. No prognosis of the cases can, however, be ventured upon safely. Pierre will probably lose part of one of his feet. Baker, part of one, or perhaps both. Messrs. Wilson and Brooks are in the same condition, being frozen above the phalangeal joints.

Mr. Ohlsen has a frost-bite on one of his toes, but it will prove only a flesh-wound. Mr. Petersen's symptoms grow more unpleasant. Mr. Sontag has an acute attack of scurvy, with pericarditis. Of the original party of eight, Thomas Hickey alone remains well and sound.

The remainder of the ship's company are all in a very reduced condition. Symptoms of scurvy are visible in every one, and the severe exposure of this trying journey has favoured its development. Mr. Bonsall, Mr. Morton, William Godfrey, J. Blake, and Hans Hendrick, are those least affected and most able for duty.

I think, however, that there is every reason to hope for a speedy restoration to perfect health of the major part of the ship's company. Allow me to express a hope also that you may soon be enabled under Providence to again take the field for the further conduct of your explorations.—Respectfully submitted, your obedient servant,

I. I. HAYES, *Surgeon to the Expedition.*

BRIG ADVANCE, RENSSELAER HARBOUR, April 5, 1854.*

EASTERN COAST OF SOUND :

Report of Messrs. M'Gary and Bonsall, June–July, 1854.

BRIG ADVANCE, July 3, 1854.

SIR,—According to your orders, Mr. M'Gary and I took charge of a party sent out to explore the eastern coast of Smith's Sound and the Great Glacier which terminates it.

June 4.—We left the vessel at 4.30 p.m., and reached the land-ice on the eastern shore of our bay in about two hours. A strong wind set in from the north, and at 8.30 p.m., when about two miles south of Coffee Gorge, we concluded to encamp. The thermometer in the shade stood at 26°.

June 5.—This morning was calm, the thermometer at 25°. After getting breakfast, we started at 7.45 a.m., and travelled up the land-ice about half way to the terminus of Glacier Bay, where we took the floe, and reached the opposite side at 4.30 p.m., when we encamped. Thermometer, 27°.

June 6.—Started at 7.30 a.m., feeling quite cold, the thermometer being at 15°. We passed up the coast of Marshall Bay as far as the two gorges, when we took the floe and crossed to Chimney Rock, the road being much clearer of hummocks than any before travelled across this bay.

* Jefferson Temple Baker and Peter Schubert, affected as by the above report, died on the 7th of April and 22d of May.
I. I. HAYES.

We arrived at 6 P.M., and found the cache at this place had been destroyed by a bear. He had eaten the bread, and with a stroke of his paw had destroyed the can of alcohol. We encamped near the rocks, with a strong northerly breeze accompanied by snow. Thermometer, 23°. Thomas complained very much of his knees, and several bluish spots appeared in the skin, evidently caused by scurvy. Mr. M'Gary's eye was very painful, though better than during the day.

June 7.—We started at 8 A.M., with a light north breeze and the thermometer at 24°. Soon after passing Cape Russell, although the sun shone on our backs, the reflection of his rays from the land-ice was very painful to our eyes. Morton and Riley were both snow-blind, and suffered great pain.

We reached the cache about 5 P.M., and found that this one had also been visited by a bear. He had rolled one of the barrels of bread over the ice-foot into the water, had eaten a can of chocolate, some potatoes, &c., and in his search had torn several of the bags. Thermometer this evening, 35°. Made twenty miles to-day.

June 8.—We did not start to-day until 12 M., as we were fatigued from our long march yesterday. We went seven miles up the coast to the ravine near the west cape of the large bay, at which place we encamped, as I wished to take solar bearings from this position. Before supper I returned to the cache, a distance of seven miles, in order to procure some articles we had forgotten.

June 9.—This morning the thermometer stood at 30°, with a clouded sky and a cool breeze from the S.W. We left at 7.20 A.M., and, crossing the ice-foot about a mile from our encampment, started across the bay for the low point or land on the opposite side of it. At noon I took solar bearings of the prominent points in the interior of the bay.

After nine hours' travel over hummocks and deep snow, we reached a point of land running out into the bay about a mile and a half. From this point a crack twelve feet wide ran in a northerly direction into the bay. This we crossed on the ice-foot, and encamped on the opposite side. Thomas is better, and Morton and Riley complained less of their eyes. Mr. M'Gary is no better. I here took an observation for longitude. Thermometer at 34°.

June 10.—Just after midnight, while asleep in our tent, we were suddenly surprised by a visit from a bear. Mr. M'Gary was awakened by the scratching of the snow near his head. He soon aroused us; but, to our consternation, there was not a gun within reach, they having been carelessly left on the sledge. In the meantime the bear had walked leisurely around the tent, and finally thrust his head inside, when we assailed him with burning matches and paper without effect. Thomas, with more presence of mind than any of us, proposed to cut a hole in the back part of the tent and get the boat-hook. The bear was at this time eating the remainder of our seal, which we had buried in the snow in front of our tent-door. Thomas rushed out and struck him on the nose with the boat-hook, which forced him to recede to the other side of the sledge. He then seized the rifle and handed it to me. The bear had gone about twenty-five yards from us when I fired and sent the ball through his lungs. He ran about a hundred yards and fell dead. We then skinned him, and at the expiration of two hours were ready to turn in again.

We rested longer than usual, and, after breakfast, cut up the bear, took part of the hind-quarters, and left the remainder for the dogs when they should arrive.

We travelled over very deep snow, and, after crossing two cracks, encamped at 3 P.M. Mr. M'Gary's eyes are so much worse as to render him entirely blind.

He also suffers from pain in his legs. Riley's eyes are quite well to-day, Morton's much better, and Thomas's rather worse.

We saw several burgomaster-gulls, as well as other varieties, around the cracks we crossed. The ice in one of these cracks was only three feet thick. Thermometer, 36°.

June 11.—The weather this morning was quite warm, the thermometer being at 43°. Last evening we cooked a large quantity of bear-liver, and ate heartily of it, after which we turned in as well as usual. This morning we all suffered severe pains in our bones, and headache, but did not know whether to attribute it to having eaten the bear's liver or to the hot sun of yesterday. We were not able to proceed until 3 p.m., when, feeling rather better, we set off, and made ten miles over very deep snow.

At ten p.m. we encamped near an iceberg about two miles from Cache No. 2. A dense fog now set in from the N., and obscured all objects at more than a few yards' distance. We are all better this evening, except Mr. M'Gary and Morton. Thermometer, 45°.

June 12.—We started to-day at noon, having waited for the sun to go round so far as not to shine in our faces. At about 1.30 p.m. we reached our cache, which we found safe. We took all the provisions on our sledge, for fear our northern cache should have been destroyed. We found the water in many places several inches deep under the snow, which caused us to sink through it at every step, making the travelling very difficult. We keep regular watch since our adventure with the bear. Thomas was not so well this evening. Thermometer, 34°.

June 13.—The thermometer stood at 40° at 10 a.m., at which time we started. We found the snow deeper and the travelling more difficult than yesterday. We worked hard to reach the islands, and, after crossing several cracks in their vicinity, arrived at the foot of the land-ice at 6 p.m. We found this ice broken up and very difficult to cross. We pitched our tent on it, and went to examine the cache, which we discovered had been destroyed by the bears, the tin canister only left untouched.

As the bear-tracks were numerous and recent, I was led to suppose it had not been long since the cache was destroyed. The flagstaff was torn down and dragged some distance, but the cairn remained almost entire. We ate a supper of bear-steaks, not satisfied to pronounce the meat unfit for food without giving it a further trial. Thermometer, 40°.

June 14.—This morning is quite warm, the thermometer standing at 46°. I took a meridian-altitude, and devoted the day to washing, as there were numerous pools of water on the rocks. This evening I took an observation for longitude, and hope to get a corresponding one to-morrow morning.

The sun has been very severe upon us on our journey, every one being more or less blistered. Morton lost all the skin of his face; Riley and Mr. M'Gary complain of their eyes. Thermometer, 37°.

June 15.—This morning we rose early and prepared for a start; but, as the wind blew heavy from the S.E., and Mr. M'Gary being yet quite sick, we deferred it until to-morrow. I took bearings by compass of all the prominent points visible from the island. The weather continues very fine. Thermometer, 42°.

June 16.—As the fog was so thick this morning as to prevent us from seeing more than a few yards ahead of us, we concluded to wait until it should clear away. We did not get off until 11.30 a.m., having first taken a meridian-altitude.

Mr. M'Gary and I set off for the Glacier, and reached an island within two hundred yards of the perpendicular face, a nearer approach being prevented by the accumulation of bergs, berg-ice, and precipitous hummocks, interspersed with holes of water. This island was about the same height of the perpendicular face at this point (two hundred and fifty feet); and I think I had a better opportunity for observation than upon the glacier itself. From this point the glacier appears to have gradually covered the land with a sheet of ice twenty or thirty feet thick, in a succession of ridges and knolls, until it reaches the shore, where, still pushing outward, large flakes are precipitated to the foot, and others, sliding over them, descend into the water and remain stationary, until in their turn they are forced by other discharges into a depth sufficient to float them, and are then carried away by currents into the sea. Their manner of breakage appears to be into long flakes, which are forced over the descent until, their overhanging weight overcoming the tenacity of the ice, the piece becomes detached. Above the perpendicular face it is split into a succession of parallel cracks and corresponding indentations, forming a series of steps, sometimes horizontal, but more frequently following the inclinations of the ground under them and extending back to where the glacier becomes almost level. Beyond this are seen numerous fissures, where the ice has cracked upon taking a new angle of descent and been forced onward to the final launch.

We were fortunate in reaching this point, as an approach at any other would have been impossible, owing to the discharge of bergs and hummocks, which appeared to extend out into the sound for several miles in all directions from our position.

The glacier above its face has a gradual ascent of a few feet to the mile, until in the interior it reaches an apparent altitude of six or seven hundred feet; but the quantity of snow and deep chasms upon its surface prevent travelling upon it.

As an indication of the motion of the ice, deep muttered sounds and crashes are heard at intervals, resembling sharp thunder and distant cannon. At some points masses of small blocks and round pieces are seen, as though crushed by the weight of the mass above. The surface appears to take the formation of the land under it, as it is broken into valleys and indentations, carrying the surface-water off in streams in the same manner as land-drainage. The heads of the valleys and the dividing ridge were not distinctly visible. I here made a sketch of the opposite face, showing the character of the discharge of bergs; and I also took compass-bearings of the islands and glacier.

On arriving at our encampment, we found that Hans had reached it at one o'clock, after two days' travel from the vessel. As the dogs were tired Mr. M'Gary concluded to let them rest over to-morrow, although we should then have started on our return if the sledge had not arrived. Thermometer, 49°.

June 17.—This morning it was thick weather, and snowed quite fast during the greater part of the day. We remained in camp until 10 p.m., when we commenced packing our sledges and preparing for a start. We were ready by midnight, and, after getting on the floe, both sledges started together at 12.30 a.m.

June 18.—Morton and Hans followed our old tracks until clear of the cracks near the islands, and then turned toward the N., at about double our speed. They both walked, as the snow was too soft and deep for them to ride, their load being heavy. We travelled until 7.30 a.m., when we encamped, having made about twelve miles. Mr. M'Gary's eye was very painful this morning. We started again in the evening and walked fast, the snow bearing us quite well.

We fell into our old tracks a little to the westward of Cache No. 2., and, afterwards following them, we encamped at 5.30 in the morning of—

June 19.—Having made about thirteen miles. Mr. McGary suffered very much from the pain in his eye this morning. We started at 9 A.M., and the day being warm rendered the snow soft; but the travelling improved as we advanced. We crossed several cracks, in one of which we shot a long-tailed duck. Thomas fell in to-day in attempting to jump across one of these cracks. We passed our old encampment about 2 A.M.; we there filled our water-cans from pools on the ice.

June 20.—At 5 A.M. we arrived at Bear Point, our encampment of the 10th. We found the carcass of the bear had been eaten by the gulls. We encamped within gun-shot, hoping to get some gulls; but they were too shy, and would not alight while we stayed. We found the can of blubber safe, which would afford us fuel sufficient to last till we should reach the vessel. After breakfast we turned in and slept until 6 P.M., and at 9.30 P.M. we started across the bay.

June 21.—We reached the land-ice at 3 A.M., and deposited some pemmican for Morton on his return. We then travelled on six miles further to Dr. Kane's Cache, where we encamped at 5 A.M., very tired, after a day's travel of twenty miles. We found all safe, and after supper—or more properly breakfast—we turned in, the wind blowing strong from the west, (true.) At 11 P.M. we loaded our sledge and started towards the vessel on the land-ice. Our sledge ran very heavily, owing to a light fall of snow.

June 22.—We travelled on until 6 A.M., when we encamped, having made but ten miles. I here took an altitude of the cliffs. We started again at 9 P.M., a slight snow falling, accompanied by a north wind. This soon increased, and about 11 P.M. we stopped to take an altitude of the cliffs, and found the water running from them and forming pools on the land-ice. This is the first appearance of running water, though yesterday we observed several wet places on the cliffs and small pools on the ice. The ice-foot is much broken, and in some places the pieces are from twenty to thirty feet off shore, leaving quite a canal.

June 23.—We continued on until we reached the Cliffs of the bay, at 2 A.M. We were very tired, as we had not halted to rest since nine o'clock last evening. We had difficulty in pitching our tent, owing to the violence of the wind. We turned in and rested until 7 P.M., but could not cross the ice-foot until 10 P.M., as the tide was too low. The snow was very deep, and, as there was a sheet of water between the snow and ice, we sank to our knees at every step. After eight hours of toil we reached the shore.

June 24.—We passed up the foot-ice at 6.30 A.M., and encamped, having travelled about fourteen miles since ten o'clock last evening. We started again about 9 P.M., and travelled down the land-ice.

June 25.—At 12.30 A.M. we reached the headland, and then took the floe crossing Glacier Bay, where we encamped at 4.30 A.M. The floe on the bay was worse travelling than any we have had since leaving the vessel. The snow was so very soft that we sank to our hips in the drifts, which had four or five inches of water under them. This travelling continued for thirty or forty miles at a time, wetting our feet and causing the sledge to sink into the bottom. The water was standing in pools in all directions, and surrounding every hummock. We made to-day about twelve miles. We started this morning at ten o'clock, and pushed on toward Coffee Gorge, the land-ice being covered with ponds. About three o'clock we passed the gorge, and encamped at the Black Cliff, two miles south of it, at 4 A.M. of—

June 26.—We started this afternoon at three o'clock, and, after sighting the ves-

sel, a thick fog set in, which very materially obscured our vision ; but by following our old tracks we crossed the bay and reached the vessel at 7 P.M.—Yours, &c.,

A. BONSALL.

To Dr. E. K. KANE, *Commanding Arctic Expedition.*

*Report of a Sledge Journey to the North-west Coasts of Smith's Strait
by Dr. I. I. Hayes and William Godfrey.*

To Dr. E. K. KANE, U.S.N.

SIR,—I have the honour respectfully to submit the following report of a journey made by me under your orders for the purpose of determining the northern coasts of Smith's Strait :—

May 20.—I left the vessel at 2.30 P.M., accompanied by William Godfrey, seaman. Our equipment was as follows: A light sledge and team of seven dogs, 80 lbs. of pemmican, 16 lbs. of bread, 18 lbs. of lard and rope-yarn for fuel; a reindeer-skin sleeping-bag for each, a lamp and pot for cooking, sextant, pocket-compass, telescope, Sharpe's rifle, two extra pairs of stockings and one of boots for each.

For the first ten miles our course lay nearly due N., after which we encountered ridges of hummock running parallel with the axis of the channel, and through which we worked our way by running off a little to the eastward. Halted at 8 P.M., having made about fifteen miles.

May 21.—Started at 6 A.M.; the travelling generally smooth, with occasional ridges of hummocks, generally running in parallel lines. I was obliged frequently to run off to the westward, as no other passage could be seen, and was thus prevented making as much easting as your orders required. A meridian-altitude gave me lat. $79^{\circ} 3' 6''$. From this point I obtained excellent sights of the S.E. coast of the channel, and took solar bearings of the several capes. During the afternoon our track was more rough and tortuous, sometimes running to the W. and again to the E. of N. My rude estimate we made fifty miles, and at 5.10 P.M. were brought to a halt by a wall of broken ice ranging from five to thirty feet in height above the general level of the floe, and running in a direction N.E. by E. From this point the north headland of Rensselaer Bay bore S. 4° W. (true).

May 22.—This morning we set out at six o'clock, and on ascending the highest neighbouring pinnacle I found this line of hummocks to extend as far as the eye could reach N.E. by E. and S.W. by W., no termination or break appearing in its surface to the N. and W.

This prospect cast a sudden damper on the hope I had yesterday entertained of a speedy passage to the shore. The land was distinctly visible, and appeared not more than twenty or twenty-five miles distant. I supposed the ridge of broken ice to be the same which had baffled Messrs. Bonsall and M'Gary last fall; and as I did not think anything could be gained by pushing along this barricade, which appeared to run parallel with the coast, I determined to enter it at the first break, and then to ascend the land which rose high through the disappearing fog.

After travelling along the borders of this formidable barrier about three miles, I succeeded in effecting an entrance, and at the end of a day's journey of twenty or twenty-five miles I found, to my disappointment, that instead of encamping,

as I had hoped, under the high cliffs of the shore, we were forced to build our snow-house in the midst of this wilderness of broken ice.

Our linear distance from our last encampment was not more than ten miles, as our track was very tortuous; and, moreover, we had not a foot of level travelling. Huge masses of ice from twenty to forty feet in height were heaped together, around which the fierce winds of winter had piled the drifting snow. In crossing these ridges our sledge would frequently capsize, and roll over and over, dogs, cargo, and all, into the drift below. Sometimes the sledge would be half buried in the hard snow into which it had fallen, in which case its liberation would be attended with difficulty.

The dogs were continually breaking their harness or lines, and, owing to the character of the road, this day's travel tired them more than three times that distance over smooth ice. A meridian-altitude gave me lat. $79^{\circ} 23' 5''$, but this result I obtained with difficulty, and it is scarcely reliable. Future observations made at this point determined the latitude more accurately. The general course I endeavoured to pursue was N. 20° W. in the direction of a headland of the coast made on the 27th. But to this it was never possible to adhere for five minutes consecutively. We ran E., W., N., and even S., as we were occasionally forced to retrace our steps in order to penetrate at another point. I had already, so early as yesterday noon, felt the premonitory symptoms of snow-blindness, and to-day my eyes were so weak as to render the use of the sextant painful.

May 23.—This morning I could not see in the least, and as riding on the sledge was not possible, we were obliged to lay to. My eyes improved a little during the day, and at 9.30 P.M. I managed to get one open. We immediately set out again; but an hour's use closed it, and we encamped.

May 24.—Continued in camp during the day. I have never in my life had the misfortune to have crowded into the short space of thirty-six hours so much bodily pain as I suffered from this attack. William fared better. A pair of light-blue glasses had been loaned me by Mr. Petersen, and, thinking William's eyes as driver were of more account than my own, I desired him to wear them. Although I do not think glasses are always of service, yet they are useful when the sun shines brightly, especially on the face; but on a cloudy or misty day they are of no value whatever.

May 25.—Set out at 4 A.M., and during the first two hours made nearly due N.; then, until 11.30 A.M. our course bore N.W. over the same description of road we had yesterday. I then halted to fix our position and lay down the coastline as it trended to the northward.

The meridian-observation gave me lat. $79^{\circ} 24' 4''$ with artificial (mercurial) horizon. The most distant visible headland of the coast bore N. 120° E. (magn.). Bluff sighted on the 22d, N. 100° E. (magn.). This has since been our course. Intermediate bluff, N. 110° E. (magn.). The dogs were pretty well rested by 1.30 P.M., and we again got under way, and at 5.30 we halted, having travelled during the day about five miles in a direct line from the bluff, but not less than twenty in our tortuous course.

May 26.—Started at 6 A.M., our course being N. by N.N.E. Made about the same distance as yesterday, and halted at 4 P.M. At the close of this day William was completely exhausted. The dogs were broken down, and almost unable to drag along. Their harness, having been repeatedly broken, would scarcely hold together. Every spare line we had was brought into requisition; and finally we had recourse to strips cut from the waistbands and extremities of the legs of our seal-skin pantaloons. It now became a question with me as to the

possibility of reaching the land. Seven days' provisions had already been consumed, and we were fitted out for but ten. The severe nature of our journey precluded any abatement in our daily allowance. The deceptive nature of the country rendered it very uncertain when we could reach the shore, having made no perceptible advance toward it during the three preceding days. I was by no means certain that it would not require as long a time to return to the vessel as we had already been out, in which event our only plan would be to kill one of the dogs for food for the others, as well as for ourselves. Feeling confident, however, that you would rather such a sacrifice should be made than that I should fail to effect a landing on the shore, I determined to push on to-morrow as far as possible.

After having cooked and eaten our simple supper of coffee and pemmican, and attended as well as I could to the necessities of my sick comrade, I left him at the sledge and walked on with the view of exploring the track for our travel to-morrow. For eight miles I found it similar to that which we had encountered for the last five days; but to my great joy I then struck upon the borders of an old floe, which appeared to run in-shore. I travelled on this smooth plain about two miles, and ascended a high hummock, from whence I could see this field locked against the bluff headland toward which we had been for several days directing our course. On my return to the sledge I selected the best track, carefully walking through every chasm and around every point which I thought passable, leaving conspicuous markings by my foot-tracks. My determination was to push my way forward as far as possible, by drawing William on the sledge in case he should not be able to walk.

May 27.—Reached the sledge at 2 A.M. after a walk since my last night's rest of not less than forty miles, over rough masses of ice and drifts of snow. I then turned into my sleeping-bag. At 7.30 A.M. rose, cooked our breakfast, and started by 9.30 A.M., one hour having been consumed in mending our harness. As the dogs had no food on the previous evening, two of them had eaten their harness-lines to satisfy their hunger, and a third had consumed all his harness which was within his reach. An extra whip-lash furnished a line; a belt cut into strips, and a slice of William's pantaloons, fitted out the harness.

This morning William was able to travel, his cramps having left him. In three hours and a half we reached the old floe, and in three hours more we made the land, at the bluff headland toward which we had directed our course since the 22d, and to which bearings were made on the 25th. This point is to the north and east of a little bay which seemed to terminate about ten miles inland. The dogs were tired and worn down, and their harness in a sad condition. It would require several hours to repair our sledge, as one of the runners was broken and nearly all the rivets lost. On examining our provisions, I found we had but about eighteen pounds of pemmican left. Eight days had been spent in making the passage of the channel, and I had no reason to suppose better fortunes would attend us on our return.

As yet we had seen no bear, and since leaving the eastern coast not a single seal. The extreme improbability of taking any of these animals was too great to base upon it any plan of operations. The propriety of sacrificing part of the dogs for the sustenance of the remainder was very doubtful; especially as it was impossible for me to know how far that might interfere with your future plans.

The travelling to the northward was good. The land ice was broad and smooth, and the floe outside much less hummocky than at a greater distance from the shore. I felt assured that I was at or near the mouth of the channel

you had so confidently predicted would be found opening to the northward of the so-called Smith's Sound. Everything seemed favourable to our progress, except our short allowance of food. Had I possessed the whole world, I would have given it for fifty pounds of pemmican.

There was now no alternative; and, after a halt of sufficient length to fix our position and rest the dogs, I reluctantly put about for the brig. I conjectured that we were at least one hundred and fifty or two hundred miles to the north and east of previous explorations. To make a survey of this new coast could now be my only object.

May 28.—We rose this morning by two o'clock. I left William to repair the harness and mend the sledge, while I ascended a neighbouring peak. But, before I could reach a point which would command an extended view, a thick fog set in, and, as it rolled along the sides of the mountain, it completely shut me out from the scene beneath. I had, however, a fine view of the interior. Peak after peak rose above the misty sea, and a great mountain-chain seemed to follow the trend of the coast-line.

Returning in time for the noonday observation, I found our position on the land-ice to be lat. $77^{\circ} 42' 9''$ N., and lon. $71^{\circ} 17'$ W. The coast-line to the south trended S. 171° W. (magn.), W. 27° S. (true); to the north N. 151° E. (magn.), W. 43° E. (true). Got under way at 10 A.M.; travelled along the land-ice, which averaged from fifty to one hundred and fifty feet in width, covered with light snow, which made the travelling pretty good. With both of us on the sledge, the dogs made from five to six miles an hour.

At 5 P.M. we halted at the north cape of a deep bay. The land between these two stations falls 5° more off to the west than the general trend of the coast.

The observation to determine the positions of the different points along this line, as well as the capes, bays, and headlands that follow, you will find in tabular form appended to this report.

May 29.—Started again to cross the bay at 6 A.M. We found the snow two feet deep and wet, making it impossible for the dogs to draw us on the sledge.

The coast between the first and second halting-stations, as far down as Cape Sabine, consists of high cliffs of magnesian limestone. The debris was usually low, rising at an angle of about forty degrees, and the cliffs generally rose smooth and unbroken to a height of not less than one thousand feet, terminating above in gentle slopes which rose into lofty peaks whose sides were mostly covered with snow and ice, while the deep valleys separating them were often filled with glacier.

Below the points marked *x y* on the chart, the cliffs presented a series of escarpments, rising step after step to a height of six hundred feet above a debris of about two hundred. The centre was depressed about fifty feet below either end; and the graceful sweep of outline of this semi-basin, with the beautiful regularity of the steps, gave a symmetrical beauty to the cliffs which those of the southern side of the channel did not possess. I would respectfully suggest them as being well worthy of a name.

(Sketches enclosed).

After observing the meridian-altitude of the sun at noon, we started again. Unlike yesterday, the land-ice was narrow and covered with deep snow. The dogs made but little headway, the travelling being very laborious. William's cramps were increasing; and, with the hope of finding a smoother road, I took the floe, which proved to be little better. The snow was not quite so deep; but, as we had ridges of hummocks to pass, we were both obliged to walk most of the way, and reached the opposite shore after a continuous journey of seven hours.

At 4.30 P.M. we halted to melt snow and refresh ourselves with a cup of coffee, having made about twelve miles' course S. 5 E. We now lay under the cape bounding the deep bay we crossed yesterday. With the exception of Sanderson's Hope, south of Upernavik, this mass of rock is the most majestic I have ever beheld. Its longest face, presenting on Smith's Sound, is at least five miles; and the face presenting N. about three miles without a break. At the point its altitude is fifteen hundred feet, measured by sextant-angles with a base-line stepped upon the floe. The background is much higher. We this day gave our dogs our last scrap of pemmican.

May 30.—We got under way at 6 A.M., having deemed it expedient to lighten our load as much as possible by leaving behind us our sleeping-bags and every article which could at all be dispensed with; among which was a suite of geological specimens which I had taken the trouble to collect from the broken cliffs of the bluff reached on the 27th. I retained a pair of seal-skin boots, which I thought might serve as a breakfast for the dogs, our stockings, the compass, sextant, telescope, rifle, and lamp. All else was thrown off, to the amount of about forty pounds.

My reasons for this sacrifice I have before stated. I knew full well the service the sleeping-bags would be to you during your future journey; but, as William could no longer walk, I found it impossible to drag him and all our cargo on the sledge. In dispensing with those articles so valuable to us, I hoped to facilitate our arrival at the vessel, and thereby avoid the necessity of killing one of our dogs, thus causing a loss which could not be replaced.

Our travelling for the first few miles to-day was very rough; but the further we receded from the shore we had harder snow and less sludge. We rode alternately until we reached the middle of the channel, when the dogs could drag us both at the rate of five miles an hour.

The general trend of the coast from the cape last described is W. 57° S. At a mile from the shore five headlands were distinctly visible nearly on a line; at five miles further, another headland appeared; and at ten miles more, another. Our course was S.S.W., (true.) A thick fog soon appeared, and I did not get another sight of the shore until noon, when a meridian-altitude gave me lat. 79° 6'. I obtained good bearings to the cape where I left the land-ice, and the intermediate points between it and Cape Sabine to the south. These, together with observations previously made, enable me to chart the coast-line from Cape Sabine to thirty miles north of the furthest point reached by me. This material, together with the chart projected therefrom, is now in your possession.

(Track-Chart accompanies.)

Between the seventh cape mentioned above, and the next point of land to the south, is a bay which I was at first inclined to believe might be a channel opening to the westward; but as the fog cleared away I could distinctly see the land around the greater part of its margin, which convinced me it was only a deep bay having a narrow entrance. I had no means whereby to determine the true bearing of the land from this point, and in projecting the chart could only place it in connection with my last positively-determined position and Cape Sabine, previously the most northern determined point of land. To-day I called into requisition the pair of old Esquimaux boots which I had already anticipated might prove serviceable. By cutting them into strips, and mixing with them a little of the lard we had for our lamp, the hungry animals made quite a hearty meal.

May 31.—Soon after leaving this station we encountered ridges of hummocks which materially interrupted our progress; but they were neither so high nor

difficult to pass as those further up the channel. We had, however, comparatively smooth travelling, the hummocks being about twenty miles from the west shore. This smooth floe seems to be continuous along the shore to the bluff where I effected my first landing, at which place it runs to a point.

Our course across the channel was as near S.E. as the sluggishness of the compass and the motion of the ice would allow. As we were enveloped in a dense fog, the compass was our only guide. At 6 P.M. the land began to loom up through the fog, and I soon determined it to be Esquimaux Point. We then shaped our course more to the northward, and at 10 P.M. made the land-ice on the north side of Bedevilled Reach.

We gave the dogs the shakings of the bread-bag and the scrapings of the lard-cloth, mixed up with scraps of a pair of skin mittens, and some strips cut from the lower extremities of our pantaloons.

June 1.—We continued pushing our way along the shore without halting, and reached the vessel at 1 A.M.

In our journey down the west coast but two icebergs were seen, and none in crossing the channel until we came within eight miles of the east coast. The belt seems to hug the eastern shore and to widen and thicken as you advance up the channel, being eight miles in width at Force Bay.

Very little animal life was seen. We discovered foot-tracks of several bears, but came in contact with none. Foot-marks of fox and ptarmigan were seen at different points along the west coast, and occasionally a seal was observed on the ice; but they were too timid to allow our approach.

It affords me great pleasure to speak well of the services of my companion. He is an excellent driver, and understands well the management of the dogs.

In presenting this report, I beg to express my regret that I have not been able to do so at an earlier date, as well as that the observations for the survey of the newly-discovered coast-line are given so little in detail. But when you are apprised that after my first attack of snow-blindness I had not the proper use of my eyes,—often not being able to see ten fathoms from me, sometimes being totally blind,—you will, I trust, excuse both the delay and the deficiency. The data are, however, sufficient to enable me to fix the positions of the land-marks with reliable accuracy. The new coast-line which I am enabled to add to the chart is about two hundred miles in extent, and in the twelve days' absence, during two of which we were inactive, the dogs travelled not less than four hundred miles. The last day's travel was seventy miles, and after disposing of our sleeping fixtures our rest was procured by basking in the sun, lying on the snow, or on the sledge, under the lee of a snow-bank.—Respectfully submitted, your obedient servant,

I. I. HAYES.

Dr. E. K. KANE, U.S.N.,
Commanding Arctic Expedition, in search of, &c.
BRIG ADVANCE, RENNELLAER HARBOUR, July 12, 1854.

Mr. Morton's Report of Journey to north and east during the months of June and July, 1854.

SIR,—June 4.—I left the vessel at 4 P.M. in company with the party of Messrs. M'Gary and Bonsall, and arrived at Cache Island on the 14th. The details of this journey are fully given in Mr. Bonsall's report.

I remained at this place with Messrs. M'Gary and Bonsall's party, waiting for Hans, who arrived with the dog-sledge two days later.

June 18.—Allowing twenty-four hours' rest for Hans and the dogs, we set out at 0.30 A.M. in company with the other party, with whom we were forced to travel a mile on their way to the west, in order to avoid some cracks and openings in the ice near the glacier.

After leaving them we pursued a northerly course nearly parallel with the glacier, and from five to seven miles distant from it, according to the condition of the ice.

The snow was deep and free from hummocks; but, as the travelling was very heavy, we averaged only about three and a half miles per hour; which in a continued journey of seven and a half hours, made our total distance but little more than twenty-six miles.

The appearance of the glacier is accurately described in Mr. Bonsall's report. When about twelve miles out I took a back-bearing to Cache Island, and found it N. 284° E. magn. (N. 176° E. true). We encamped at 8 A.M., our course having been N. 103° E. magn. (N. 5° W. true). A back-bearing from the camp to Cache Island gave N. 285° E. magn. (N. 177° E. true).

We started again at 9.30 P.M., and halted at midnight in order to take observations.

June 19.—We resumed our journey at 1 A.M. During three successive hours the travelling was very heavy; the sledge would sometimes be buried in the snow notwithstanding all our exertions to prevent it. Afterward the travelling became better, and we moved off at the rate of four miles per hour until 4.20 A.M., when we were suddenly checked by meeting the barrier of icebergs mentioned by Mr. Bonsall in his journey in September 1853. The icebergs and hummocks were so close together that we could not see one hundred yards in any direction. We pursued a westerly course about five miles along the edge of the hummocks and icebergs, when we discovered an opening between them, which we entered, and after a short circuitous route struck again on the right course. We halted at 5.45 A.M., and after supper climbed a high iceberg to select our course for the next day. From this point I discovered some rocks projecting from the face of the glacier, and also some hills on its surface. The sun was so much obscured that I could not obtain a solar bearing.

At 10.30 P.M. we resumed our journey, our course being N. 76° E. magn. (N. 32° W. true); but at the end of three miles our progress was arrested by icebergs, hummocks, and cracks. We therefore were forced to retrace our steps, and at midnight arrived again at our last encampment. We then followed a westerly course, and four miles brought us to a group of icebergs, between which we found great difficulty in making our way, having to ferry ourselves occasionally over the numerous lanes of water, or to make bridges over them from the floe-pieces which were piled up in hummocks on the edges of the cracks.

June 20.—We succeeded in getting through the bergs by 2.30 A.M. Hans shot a dovekie in one of the cracks. At the same time we first sighted the west land with three prominent capes. We soon got on better ice than we had yet passed over, and made good headway to the N. and E. to within twelve miles of the glacier and about forty miles of the west shore.

The level surface of the glacier was interrupted by rocks and land-hills, excepting which, the background was nothing but snow or glacier. The land becomes continuous to the N., and has an appearance similar to the hills west of our winter quarters, only the debris is comparatively not so high.

No seals were seen during the two preceding days, but to-day we saw several,

and three dovekies. We encamped at 7.20 A.M., and at 11.20 P.M. started again and stood for a point of land which I supposed to be a cape, as there was a vacancy between it and the west land. The ice was good and free from bergs; only two or three in sight.

The weather became very thick and misty. We suffered from cold, a strong N.E. wind blowing off the glacier at the time. Temp. $+20^{\circ}$. The west land which I saw faintly yesterday was soon obscured, and the cape for which I stood vanished from our view, only a small portion of the east shore remaining faintly visible. I steered my course entirely by bearings of the cape which I took yesterday.

June 21.—At 7 A.M. we reached the mouth of a channel having to the northward and westward a fine headland. Here stretching ahead we found open water, and before I was aware of it we had gone some distance on rotten ice, which was so weak that we could not get within a mile and a half of the open water. My first intention was to go up the channel on the ice, but the water prevented it. We retraced our steps carefully, calling the dogs after us, as they were very much frightened. Birds, apparently ducks, were seen in great numbers flying over the open water.

On reaching the safe ice we travelled in an easterly direction, standing for the cape on the east side of the channel, and halted a mile from it at 7.40 A.M.

After supper, or more properly breakfast, I went to the cape, and around it at the distance of four miles from our camp. The temperature of the water was $+40^{\circ}$. I found it would be difficult to pass the cape with a sledge, as the ice-foot was scarcely broad enough; but beyond the cape the ice-foot became better, and would apparently afford good travelling. We returned, fed the dogs, and turned in, after taking a meridian-altitude of the sun.

We started at 11.30 P.M. One of us climbed up the ice-belt, while the other handed up the dogs and provisions, making a ladder of the sledge. While here we saw a large flock of geese.

We then prepared for a journey up the channel, by making a cache of half our provisions, which would be enough to take us to the vessel on our return. It was very difficult to get around the cape, as the ice-foot was nearly all worn away and the cliffs were very steep. This caused me to reflect what could be done in case the narrow ice-foot should be washed away before my return. I observed a ledge on the face of the cliffs about seventy feet above the ice-belt, over which I could escape myself, and leave the dogs and sledge behind.

We put the sledge on one runner, and thus passed around the most narrow part of the ice-foot. The water under us was very deep and transparent. Its temperature was 36° close alongside the ice-foot, but in a rapid tideway. We here lost our thermometer.

June 22.—At 0.30 A.M. we got around the cape and found good travelling; we went freely at the rate of six miles per hour. After passing three or four bluffs with small inlets, we got beyond the cliffs, where a low country opened on us. Here we saw nine seals in a small bay.

The land-ice across this shallow bay or inlet extended in some places two miles from the water's edge, where piles of gravel were formed, so that the sledge was drawn between hummocks of gravel. On account of this broad land-ice, we were enabled, in some places, to make a short cut, instead of following all the indentations of the coast. About two miles in-shore were cliffs which appeared perpendicular, and not unlike the broken walls of houses. About midnight I observed pieces of ice moving up the channel, toward the north, at the rate of four knots per hour; and now when we are encamping they are moving down the channel at the same rate.

The ice here is entirely broken up, and the channel is navigable for vessels of any size. Eider-ducks are so numerous that Hans killed two at one shot. Large flocks of geese are flying in-shore and up the channel, and the rocks are covered with tern, who are now breeding. Dovekies are very numerous, and ivory-gulls and burgomasters have made their appearance.

We have travelled fifty miles to-day, and must be forty-five miles up the channel. It has been very cold, and so cloudy that I have not been able to see the sun since I entered the channel, which runs north (true), and seems to be about thirty-five miles wide. The opposite (western) shore runs apparently in a straight line, and is very high; the mountains, having a form resembling a sugar-loaf, extend far back in the interior. This coast-line is interrupted by only two bays.

June 23.—In consequence of a gale, we did not start until 0.30 A.M. After travelling about six miles we were arrested by floe-ice in an inlet, which was pressed over the land-ice against the mountains to the height of one hundred feet. Beyond this there was no ice-belt. We secured the dogs and left the sledge, as it would be impossible to transport them over these hummocks, which we succeeded in ourselves crossing with great difficulty. Our object was to ascertain the state of the travelling on the other side. We found it worse, with few landing-places, the cliffs overhanging the water and broken masses of ice. On these we ferried ourselves over to such pieces of ice as were attached to the coast. In this manner we travelled about four miles, and returned, after sighting a high cape on the north side of a bay before us, opposite to which lay an island. On reaching the sledge we made ourselves as comfortable as possible, and resolved to go on to-morrow without it. Here the ducks were less numerous, but gulls were seen in numbers.

June 24.—We started on foot at 3 A.M., taking with us a small stock of provisions. We found great difficulty in crossing some places, where, in the absence of land-ice, we were forced to crawl over the rocks, or get on loose floating pieces of ice and jump from one to another, or else ferry ourselves until we could again reach the land.

When about nine miles on our way to-day, we saw a bear with a young one at a short distance from us. Five of our dogs had followed us, and, seeing the bear, gave chase to it. The bears ran a considerable distance in-shore. The young one, which could not move fast enough, was pushed ahead by the old one, which sometimes turned round and faced the dogs in order to enable the little one to gain ground. Finally she stopped, and, taking the cub between her fore-legs, guarded it, and at the same time kept the dogs at a distance. She would sometimes make a jump at them, but always kept her eye on the little one, and never left it unprotected. She was thus fighting them off when we came up, and Hans shot her dead, and then killed the cub. We skinned both of them, and gave the old one to the dogs, but cached the young one, to be eaten on our return. The skins we wished to take with us to the ship. We found at this place the runner of an Esquimaux sledge. Many small pieces of willow, about an inch and a half in diameter, had drifted up the eastern slope of this bay. Much grass was seen, as well as many plants, all of which I have reported to Dr. Kane. We had wood enough, including the sledge-runner, to cook a large part of the bear.

After this delay we started, in the hope of being able to reach the cape to the north of us. At the very lower end of the bay there was still a little old fast ice, over which we went without following the curve of the bay up the fiord, which shortened our distance considerably. Hans became tired, and I sent him more

inland, where the travelling was less laborious. As I proceeded toward the cape ahead of me, the water came again close in-shore. I endeavoured to reach it, but found this extremely difficult, as there were piles of broken rocks rising on the cliffs, in many places to the height of one hundred feet. The cliffs above these were perpendicular, and nearly two thousand feet high. I climbed over the rubbish; but beyond it the sea was washing the foot of the cliffs, and, as there were no ledges, it was impossible for me to advance another foot. I was much disappointed, because one hour's travel would have brought me round the cape. The knob to which I climbed was over five hundred feet in height, and from it there was not a speck of ice to be seen. As far as I could discern, the sea was open, a swell coming in from the northward and running crosswise, as if with a small eastern set. The wind was due N.,—enough of it to make white caps,—and the surf broke in on the rocks below in regular breakers. The sky to the N.W. was of dark rain-cloud, the first that I had seen since the brig was frozen up. Ivory-gulls were nesting in the rocks above me, and out to sea were mollemoke and silver-backed gulls. The ducks had not been seen north of the first island of the channel, but petrel and gulls hung about the waves near the coast.

June 25.—As it was impossible to get around the cape, I retraced my steps, and soon came up to Hans, who had remained a short distance behind.

When we returned to the spot where the bears were killed, the dogs had another feed; they had not followed us any further, but remained near the carcass of the bear. Three of them were lying down, having eaten so much they were unable to run.

After a difficult passage around the southern cape of the bay, we arrived at our camp, where we had left the sledge at 5 P.M., having been absent thirty-six hours, during which time we had travelled twenty miles due north of it.

June 26.—Before starting I took a meridian-altitude of the sun (this being the highest northern point I obtained except one, as during the last two days the weather had been cloudy, with a gale blowing from the north), and then set off at 4 P.M. on our return down the channel to the south.

I cannot imagine what becomes of the ice. A strong current sets it almost constantly to the south; but, from altitudes of more than five hundred feet, I saw only narrow strips of ice, with great spaces of open water, from ten to fifteen miles in breadth, between them. It must therefore either go to an open space in the north, or dissolve. The tides in-shore seemed to make both north and south; but the tide from northward ran seven hours, and there was no slack-water. The wind blew heavily down the channel from the open water, and had been freshening since yesterday nearly to a gale; but it brought no ice with it.

To-day we again reached the entering cape of the channel, and camped at the place where we deposited half of our provisions on our journey to the north. I here found the thermometer which I had lost on the 21st. The water, five feet deep, taken from a rock, gave +40°, the tide setting from northward. The air in the shade was +34°.

June 27.—We started at 2 P.M. and travelled four hours; but the snow was so soft, in consequence of the warm sun, that we made slow progress. We camped at 6 P.M., intending to commence our night-travelling again.

June 28.—We started at 2 A.M., and travelled along the land, in order to discover more accurately where the glacier joins it. About thirty miles from the entrance of the channel it overlaps the land, which here becomes gradually lower. This land is of low round knobs, about eight hundred feet high.

Two large cracks running east and west caused us some delay. We had to go a great distance to the west near one of them, until we found a loose piece in it large enough to ferry ourselves and the sledge over. A great number of seals were around the cracks. We halted at 9.45 A.M., opposite the place where the land and glacier unite.

June 29.—We started at 0.40 A.M., and went to the south between the icebergs. We were detained by two cracks which we met with to-day. We saw the west shore to the south-of-west from us, which, as far as the eye could reach, did not appear to alter its trend.

June 30.—We started at 1.40 A.M., and soon got clear of the icebergs. We found better travelling-ice; but the snow was soft, and melting very fast. In a few days more it will be impossible to travel here.

This morning we sighted Cache Island, and shaped our course for Sunny Gorge. I saw the western shore to-day, and think it was about sixty miles distant.

July 1.—We started at 2.30 A.M. The travelling to-day was very heavy, the snow being so soft that we sometimes sank to our knees in water; yet we got along safely. A great number of seals were on the ice, and the west shore in sight.

July 2.—We started at 0.30 A.M., and travelled fast towards Sunny Gorge. The places between the old hummocks were filled with water. The dogs were sometimes actually swimming, and the sledge floating. At 8 A.M. we halted, being very much exhausted; we gave the dogs half feed. After a short rest we started again at 1 P.M., and reached the belt at 2.30 P.M. This belt-ice was firm and solid, twenty paces wide and eighteen feet thick. We reached Sunny Gorge at 3.40 P.M., where we encamped.

July 3.—We started at 4.40 A.M., and travelled along the land-ice, which, in some places, is completely overflowed by water falling in cascades and torrents from the tops of the cliffs. It has already made trenches for itself in some places by cutting the land-ice completely through down to the gravel.

When we passed Cape George Russell I saw the alcohol-keg sticking out of the land-ice, and tried to get it; but this was impossible. I then made a hole in it and tasted the contents, but found the alcohol much diluted by snow-water. The dogs' feet were considerably cut by the honey-combed ice. We camped near Chimney Rock at 11 A.M.

We started again at 7 P.M. and crossed Marshall Bay, which was covered with water. Minturn River had made for itself a channel more than one hundred yards wide, over which we ferried ourselves, sledge, and dogs, on a large loose piece of ice. To the west of Marshall Bay a torrent of water came down every ravine, which obliged us to go off the ice-foot and on the floe around it.

July 4.—At 7 A.M. we arrived at the brig, after an absence of thirty days.—
I am, sir, respectfully, your obedient servant,
WILLIAM MORTON.

NOTES.

Note 1, p. 15.

Springs, properly speaking, as outlets of subterranean drainage, are almost unknown in North Greenland. At Godhaven, Disco, at the line of junction of the greenstones and the basis-granites, there is a permanent spring, with a winter temperature of 33.5° Fahr.; but the so-called springs of the Danish settlements, as far north as 73°, are derived from a surface-drainage which is suspended during the colder months of the year.

Note 2, p. 15.

The shark-oil trade is of recent growth in North Greenland. It has lately been extended as far north as Proven. At Neorkanek, the seat of greatest yield, about three hundred fish are taken annually. The oil is expressed from the liver of the Arctic shark (*S. borealis*) the Hvowalder of the Icelanders; it is extremely pure, resisting cold, and well adapted to lubrication. It brings a higher price in the Copenhagen market than the best seal oils.

Note 3, p. 17.

There are no Moravian missions in North Greenland, and but three of their settlements in the south. Named in the order of their date of colonization, they are New Hernhut, Lichtenfels, and Frederickstahl. With these exceptions, the entire coast is Lutheran. The Lutheran missions, although distinct in organization from the Royal Greenland Company, are nevertheless under the direct patronage of government, and administered by a board appointed by the crown. The Moravians have no special facilities, and are dependent for their supplies upon private negotiations and the courtesy of the Danish trading vessels.

Note 4, p. 19.

There are four sizes of reindeer skins, of distinct qualities and marked values among the Esquimaux:—1. Bennesoak—the largest males, generally without antlers. 2. Nersutok—males of lesser size, retaining their antlers during the winter. 3. Koluak—females still smaller, but not materially so. 4. Nohkak—the yearlings or younger animals. These last are prized for children's clothing. It is the Bennesoak which is so useful as an Arctic sleeping bag in the sledge journeys.

Note 5, p. 21.

Within comparatively recent periods the Esquimaux had summer settlements around Wilcox Point and the Melville Glacier; but in 1826 the small-pox so reduced them that they were concentrated about Upernavik. Except occasional parties for the chase of the white bear or the collection of elder-down, there are no natives north of Yotlik. Cape Shackleton and Horse's Head are, however, visited annually for eggs and down. By the tortuous route of the Colonial Itinerary, the latter is rated at twenty-eight Danish, or about one hundred and thirty-five statute, miles from Upernavik.

Note 6, p. 27.

The North Water, although its position varies with the character and period of the season, may be found, under ordinary conditions, in the month of August off Cape York. The local name given to it by the whalers is the Cape York Water.

Note 7, p. 28.

This moss—an unrecognised sphagnum—was studded with the pale yellow flowers of the *Ranunculus sabinii*. No less than four species of *Draba* were afterward found on the island.

Note 8, p. 29.

Poa and alopecurus, with their accompanying bird-life, are abundant on the southern faces of Cape Alexander; but all the headlands to the north are utterly destitute of apparent vegetation. On Sutherland's Island a scanty supply of scurvy grass (*Cochlearia fenestrata*) may be found.

Note 9, p. 30.

This ice was not distinguishable from aloft at the time of leaving the brig.

Note 10, p. 33.

My survey of this harbour shows forty fathoms water to within a biscuit-toss of its northern headland,—a square face of gneiss rock; thence east by south (true), heading for a small glacier, you may carry seven fathoms to within two hundred yards of land. The southern side is shoal and rocky. The holding-ground is good, and the cove completely landlocked, except a small channel from the westward; but, owing to the prevalence of fogs as well as wind-eddies from the cliffs and persistence of local ice, I cannot recommend it for a winter harbour.

Note 11, p. 35.

This animal presented one of those rare cases of a well-developed second process protruding about six inches. I was unable to preserve the specimen.

Note 12, p. 35.

These were the results of direct pressure,—more properly, "crushed ice." The ice-hills of Von Wrangell and American authorities are grounded ices upheaved by wave and tidal actions.

Note 13, p. 38.

These are arranged in lines not unlike those described by Captain Bayfield on the Labrador coast. They are undoubtedly the result of ice-transportation, the process being still going on. At the head of Force Bay are traces of an ancient moraine.

Note 14, p. 39.

My note-books contain many instances of the facility with which the Esquimaux dog relapses into a savage state. There is an island near the Holsteinberg fiords where such animals hunt the reindeer in packs, and are habitually shot by the natives.

Note 15, p. 41.

See page 192. For comparisons of difference of longitude between my own and Captain Inglefield's surveys, consult any point on Admiralty charts north of 78° 37',—the latitude of Rensselaer Harbour, which was regarded as our prime meridian.

Note 16, p. 42.

This valley is flanked by terraced beach-lines; its background is the seat of an ancient moraine worthy of study.

Note 17, p. 45.

A case of similar peril is reported by Captain Cator, of H.B.M. steamer *Intrepid*. His vessel was carried bodily up the inclined face of an iceberg, and, after being high and dry out of water, launched again without injury. See "Nautical Magazine."

Note 18, p. 47.

The observations of our parties extended the range of the musk-ox (*Ovibos moschatus*) to the Greenland coast. None of us saw a living specimen; but the great number of skeletons, their state of preservation and probable foot-tracks, when taken in conjunction with the information of the Esquimaux, leave me no room to doubt but that these animals have been recent visitors.

Note 20, p. 51.

Except for cases of sudden effort and not calling for continued exertion or exposure, grog was not looked upon as advisable. Hot coffee was a frequent and valuable stimulus.

Note 21, p. 55.

The tenacity with which the ice-belt adheres to the rocks is well shown by its ability to resist the overflow of the tides. The displacement thus occasioned is sometimes, however, so excessive that the entire mass is floated away, carrying with it the fragments which had been luted to it from below, as well as those incorporated with its mass by deposits from above.

Note 22, p. 56.

A reindeer-skull found in the same gorge was completely fossilized. That the snow-waters around Rensselaer Harbour held large quantities of carbonate of lime in solution was proved not only by the tufaceous deposit which incrusts the masses, but by actual tests. The broken down magnesian limestones of the upper plateaux readily explain this.

Note 23, p. 57.

The several minor streams which make up Mary Minturn River run nearly parallel with the axis of the interior glacier from which they take their origin, and unite in a single canal without intermediate lakes.

Note 24, p. 58.

The flower-growth of the valley of Mary Minturn River proves that certain favouring influences—especially those of reverberation of heat from the rock, and continued distillation of water through protecting mosses—give a local richness to the Arctic flora which seems to render it independent of arbitrary zones. No less than five Crucifers were collected at this favoured spot, two species of *Draba*, the *Cochlearia fenestrata*, *Hesperis pallasi*, and *Vesicaria arctica*. The poppy grew at a little distance from the stream; and, still further shaded by the rocks, was the *Oxyria digyna* in such quantities as to afford bountiful salads to our party. The immediate neighbourhood of the water-course presented a beautiful carpet of *Lichnis* and *Ranunculus*, varied by *Dryas octopetala* and *Potentilla pulchella* growing from beds of richest moss. For the determination of the species of these plants I am indebted to Mr. Durand; it was not until my return and my plants had been subjected to his able analysis that I was aware that *Vesicaria* was upon my list. I had never seen it north of Egedesminde, latitude 68°; yet both it and *Hesperis* are also among Dr. Hayer's collections.

Note 25, p. 59.

The lines of junction of floes serve rudely as an index to the direction of drift. The hummocks are generally at right angles to the axis of drift.

Note 26, p. 65.

The dimensions and general structure of the sledge are of vital importance for a successful journey. Very slight, almost imperceptible, differences cause an increase of friction more than equal to the draught of an additional man or dog. The curvature of the runners—that of minimum resistance—depends upon elements not easily computed; it is best determined experimentally. The *Faith*—which for the heavy and snow-covered ice of Smith's Straits was the best sledge I ever saw—differed somewhat from the excellent model of Captain McClintock, furnished me by the British Admiralty: its increased breadth of runner kept it from burying in the snow; while its lesser height made it stronger and diminished the strain upon the lashings. I subjoin the dimensions of two nearly similar sledges,—Mr. McClintock's and my own:—

McClintock's.		The Faith.	
	f. in.		f. in.
Length of runner.....	13 0	Length of runner.....	13 0
Height of do.	0 11½	Height of do.	0 8
Horizontal width of all parts.....	0 2½	Horizontal width of rail.....	0 2½
		" " base of runner.....	0 3½
		" " other parts.....	0 2
Thickness of all parts.....	0 1½	Thickness of all parts.....	0 1½
Length, resting on a plane surface.....	5 0	Length, resting on a plane surface.....	6 0
Cross-bars, six in number, making a width of.....	3 0	Cross-bars, five in number, making a width of.....	3 8

The shoeing of the large sledges of English expeditions was of burnished one-eighth-inch iron; our own were of annealed three-sixteenths-inch steel, as light as possible, to admit of slightly countersunk rivets. Seal-skin lashings were used for the cross-bars, applied wet; the wood was hickory and oak, not the Canada elm used by the Lancaster Sound parties.

A sledge thus constructed, with a canvas cover on which to place and confine the cargo, would readily load, according to the state of the travel, from one hundred and fifty to two hundred pounds per man. The *Faith* has carried sixteen hundred pounds.

Note 27, p. 67.

These boats were not well adapted to their purpose, their bulk being too great for portability. The casing of basket-willow I regard as better than a wooden frame or distension by simple inflation with air. No sledge, however, should be without the India-rubber floats or portable boat of Lieutenant Halkett.

Note 28, p. 67.

This is quoted from the original report of the party. There are no syenites upon this plane; the rocks are entirely destitute of hornblende. They are of the same bottom-series as the felds about our harbour, highly feldspathic and sometimes porphyritic granites passing into coarse gneisses.

Note 29, p. 69.

One end of the cord represented a fixed point, by being anchored to the bottom; the free end, with an attached weight, rose and fell with the brig, and recorded its motion on the grooved circumference of a wheel. This method was liable to objections; but it was corrected by daily soundings. The movements of our vessel partook of those of the floe in which she was imbedded, and were unaccompanied by any lateral deviation.

Note 31, p. 72.

The almost incomprehensible use of these small kennels as dormitories was afterward satisfactorily ascertained from the Esquimaux themselves. They are spoken of as far south as Karsuk (near Upernavik), and are at this moment resorted to in case of arrivals of hunting parties, &c. Unlike the Siberian poles, they are not enclosed by a second chamber. The hardy tenant, muffled in furs, at a temperature of -60° is dependent for warmth upon his own powers and the slow conduction of the thick walls.

Note 32, p. 74.

Hair evidently from the musk-ox was found near Refuge Inlet. The last of these animals seen by the Esquimaux was in the late spring of 1850, near Cape George Russell. Here Metek saw a group of six.

Note 33, p. 81.

For an account of the destruction of provision-dépôts by bears, see the reports of the singularly efficient sledge-operations of Commodore Austin (Parliamentary Blue-Book). The wolverine (*Gulo luscus*), the most destructive animal to Arctic caches, is not found north of Lancaster Sound. So destructive are the bears about Peabody Bay, that nothing but a metallic cylinder with conical terminations gave any protection against their assaults.

Note 34, p. 90.

The liquids subjected to these low temperatures were for the most part the ethers and volatile oils.

Note 35, p. 130.

There is a local reservoir of interior ice around Cape Alexander and toward Cape Sauvaux, which may be, however, a process from the great *mer de glace* of the interior.

Notes 36 to 41 inclusive, pp. 130, 131.

I intended to refer by these numerals to a somewhat enlarged summary of the geognostic characters of this coast; but I find it impracticable to condense my observations into the narrow limits which have been reserved for these notes. Like many other topics of more scientific than popular interest, they may find a place in the Official Reports upon which I am now engaged under the orders of the Navy Department.

Note 42, p. 131.

Where this face came in contact with opposing masses of rocks,—as at islands or at the sides of its issuing-trough,—abrupt fractures and excessive crevassing indicated the resistance to the passage of the ice-stream. I think I have mentioned a small island near the cuche that was already partially buried by the advance of the glacier and the discharged fragments at its base.

Note 43, p. 133.

Our surveys give four points for the determination of the trend of this interior *mer de glace*:—1. Up the fiord of Marshall Bay; 2. In the interior, about lat. $78^{\circ} 32'$, as observed by Dr. Hayes; 3. South of Force Bay; 4. Near Etah. These give the axis of the stream nearly due north and south.

Note 44, p. 133.

Australia, between Bass and Torres Straits, measures about sixteen hundred miles.

Note 45, p. 133.

Looking upon the glaciers of Greenland as canals of exudation, for the most part at right angles to the general axis of the interior ice, we have a system of discharge, both on the east and west coasts, coincident in direction with the fiords, which themselves bear a fixed relation to the coast-line. This coast-line, however, having now been traced to its northern face, analogy would sustain the view of the central *mer de glace* finding its exit into an unknown Polar space.

I have spoken of Humboldt Glacier as connecting the two continents of America and Greenland. The expression requires explanation:—

All of Arctic America north of Dolphin and Union Straits is broken up into large insular masses, and may be considered as a vast archipelago. While, therefore, a liberal definition would assign these land-masses to the American continent, Grinnell Land cannot strictly be regarded as part of the continent of America. Washington Land seems, in physical characters and position, to be a sort of middle ground, which, according to the different views of geographers, may be assigned indifferently to either of the two great divisions. From the American land-masses it is separated by a channel of but thirty-five miles in width; and, at this point, Greenland, losing its peninsular character, partakes in general character with the land-masses of the West. A water-channel not wider than Lancaster Sound or Murchison's, which have heretofore not been regarded as breaking a geographical continuity, is all that intervenes.

Note 46, p. 136.

Extract from Report of I. I. Hayes, M.D., Surgeon to Expedition.

"You were carried to the brig nearly insensible by the more able men of the party, and so swollen from scurvy as to be hardly recognisable. I believe that a few hours' more exposure would have terminated your life, and at the time regarded your ultimate recovery as nearly hopeless."

Note 47, p. 143.

This term is applied to the circular hole which the fetid seal (*P. hispida*) constructs in the younger floes, and through which it finds access to the air and sun. The term *attuk* is applied also to the seal itself when killed beside its retreat. I find I have sometimes written the word as *attuk*. He who has attempted the orthography of an unwritten language will excuse the variation.

Note 48, p. 173.

The dovekie (*Uria grylle*) not unfrequently winters among the open ice to the southward. I killed a specimen in full winter plumage, in the middle pack of Baffin's Bay, late in February.

Note 49, p. 178.

The immediate appearance of drifting ice under the influence of winds is well known to Arctic navigators; and this entire absence of it during a continued gale from the north seems to indicate either a far-extended open water, or ice so solid and unbroken as to be incapable of motion.

Note 50, p. 181.

The frequency with which the seal—both the hispid and bearded species—occurred in the open channel may explain why it is so favourite a resort of the white bear. No less than five of these animals were counted, and two were killed. They seemed, however, generally to seek the inland ravines which were the breeding-grounds of fowl. No marine life was reported, unless a small fish—probably a cottus—which was caught by the Kittiwake gull; yet from the bones of cetaceans found on the beach, I do not doubt but that both the sea-unicorn (*Monodon monoceros*) and white whale frequent the channel.

The bird-life was more extended. I throw into tabular form a list of the—

Birds seen about the Open Water.

Brent goose.....	Anas bernicla.....	Flying diagonally across channel to N. and E.
Elder-duck.....	S. mollissima.....	In great numbers in southern part of Kennedy Channel.
King-duck.....	S. spectabilis.....	Flying inland up Morris Bay; probably breeding.
Dovekie.....	Uria grylle.....	Breeding in rock N. of Cape Jackson; very numerous.
Arctic petrel.....	Procellaria glacialis....	North of Cape Jefferson and out to seaward.
Ivory-gull.....	Larus eburneus.....	Same.
An ash-backed gull.. } (unrecognised).... }	L. argentatus?.....	Same.
Burgomaster.....	L. glaucus.....	Southern parts of channel.
Kittiwake.....	L. trydactylus.....	Same.
Sea-swallow.....	Sterna arctica.....	Breeding in great numbers S. of Cape Jefferson.

The season was not sufficiently advanced to allow me to judge of the characters of the flora; but both Morton and Hans think that the growth was much more forward than that of our own harbour. They describe the recesses of Lafayette Bay as rivalling in richness the growth of Minturn River. They brought back no collections; and it was only by carefully comparing known specimens found about Rensselaer Bay with those seen and recognised to the north by Hans that I was able to determine upon a certain number of plants. Some others—after availing myself of the advice of my friend Mr. Durand, to whose courtesy as well as patient skill I am glad to bear tribute—I have not felt myself at liberty to insert in this limited list. This enumeration must not be regarded as an index of the actual vegetation; but, with every reservation for the imperfect observation and the early season, I am not satisfied that the flora of Kennedy Channel indicates a milder climate to the north of our winter harbour. I subjoin my scanty list:—

Ranunculus nivalis.....	In quantities about the mossy slopes of Lafayette Bay.
Papaver nudicaule.....	Well advanced and recognisable.
Hesperis pallasii.....	Found in Lafayette Bay; the siliques recognised by Mr. Durand.
Draba.....	Two forms (one probably alpina) associated with recognisable lechnis and cerastium.....
Saxifraga oppositifolia.....	Beginning to show itself.
" flagellaris.....	This latter in dried state.
Oxyria digynus.....	In quantities adequate for food.
Salix uva ursi.....	Seen dried and budding along the channel.
" arctica.....	

If we add to these three grasses, poa, alopecurus, and festuca, with the usual Arctic cryptogams, we have, except in the anomalous case of Hesperia, no plants not common to Lower Smith's Straits and Green's Channel.

Note 51, p. 183.

These remarks will be expanded elsewhere. The presence of marine shells (*Saxicava* and *Astarte*) on the upper terrace-levels about Dallas Bay, and similar facts noticed by Sir Edward Belcher and the Barrow's Straits observers, leave little room to doubt the

conclusion. But I do not cite the elevation of the coast, either as deduced from the Esquimaux habitations or otherwise, except as it illustrates changes in the relations which the water and ice once bore to each other. I do not connect it with the question of an open sea.

Note 52, p. 184.

This sledge-runner was of wood and bone together, with holes perforated for the seal-skin lashings used by the natives to scarf their work. It affords unmistakable evidence either of a current-drift and occasional open water from the sound, or of the former presence of natives to the north,—this latter implying competent hunting-resources.

Note 53, p. 184.

A popular analysis of these conditions may be seen in Professor Forbes's recent work on the glaciers of Norway. We cannot refer this open water to any analogous causes with those which explain the other polynias on this estuary. Davis Straits, off Cape Walsingham, where the channel narrows to one hundred and twenty miles, and Smith Straits, which between Capes Isabella and Ulises have a breadth of only thirty-six, are at those points clogged with immense fields of ice, extending in the earlier season from shore to shore and arresting the passage of the drift from above. It is easy to explain the occurrence of polynia below these two barriers,—the North Water of the whalers, and the upper water which I met in my unsuccessful effort to reach Beechy Island. But between Capes Barrow and Jackson, where Kennedy Channel is contracted to thirty-five miles across, and where the ices from above, if there were such, ought to be arrested as in the other two cases, we found this open water; while below it, in Peabody Bay, where analogies would suggest the probability of another polynia, we found a densely-impacted solid mass. I do not see how, independently of direct observation, this state of facts could be explained without supposing an iceless area to the further North.

How far this may extend,—whether it does or does not communicate with a Polar basin,—we are without facts to determine. I would say, however, as a cautionary check to some theories in connection with such an open basin, that the influence of rapid tides and currents in destroying ice by abrasion can hardly be realized by those who have not witnessed their action. It is not uncommon to see such tidal sinuses remain open in the midst of winter. Such, indeed, are the polynia of the Russians, the strombols of the Greenland Danes, and the familiar "open holes" of the whalers.

Note 54, p. 191.

I regret that, after a careful study of the work of my predecessor, Captain Inglefield, I am unable to make his landmarks on the E. coast of Greenland correspond with my own. The few short hours spent by the *Isabel* on Smith's Straits, and the many difficulties which we know to be attendant upon a hurried survey, readily account for discrepancies of bearing and position. A sketch inserted by Captain Inglefield, in his narrative at page 70, locates Cape Frederick VII. as the first headland to the N. of the second indentation, which, according to my survey, should be "Force Bay." But the absence of Pekintilik (Littleton Island), which is unmistakably prominent as a feature of the coast, embarrasses me. My sketches of this coast are in detail.

Note 55, p. 200.

The entire coast between Whale Sound and Cape Alexander is studded with small glaciers. Some of these are of Saussure's second order,—mere troughs upon the flanks of the coast-ridge; but, for the most part, they are connected with interior *mers de glace*, and are urged forward in their descent by the glacial accumulations of large areas. The *mer de glace* which occupies the central plateau of Northumberland is completely isolated and washed by the sea, and is necessarily dependent for its increments upon the atmospheric precipitation of a very limited surface; yet it sustains in its discharge no less than seven glaciers,—perhaps more,—one of which is half a mile in diameter by two hundred feet in depth. It is a startling instance of the redundancy of Arctic ice-growth.

Note 56, p. 256.

This propensity of the bear—in fact, of all predatory animals—is alluded to by Scoresby and others. It was curiously shown in the March journey of 1854, when a woollen shirt of Mr. McGary's was actually torn to shreds and twisted into coils.

The subjoined are given as aids to physical inquiry on the part of future travellers:—

Directions to sites of Rensselaer Harbour.

1. The observatory was placed upon the northernmost of the rocky group of islets that formed our harbour. It is seventy-six English feet from the highest and northernmost salient point of this island, in a direction S. 14° E., or in one with said point and the S.E. projection of the southernmost islet of the group.

2. A natural face of gneiss rock formed the western wall of the observatory. A crevice in this rock has been filled with melted lead, in the centre of which is a copper bolt. Eight feet from this bolt, and in the direction indicated by the crevice, stood the magnetometer. This direction is given in case of local disturbance from the nature of the surrounding rocks.

3. On the highest point of the island mentioned in paragraph 1, is a deeply-chiselled arrow-mark filled with lead. This is twenty-nine feet above the mean tidal plane of our winter quarters for the years 1853-54. The arrow points to a mark on a rocky face denoting the lowest tide of the season; both of these are referred by sextant to known points.

4. In an enlarged crack five feet due west of above arrow is a glass jar containing documents. (See p. 206.)

5. A cairn calls attention to these marks: nothing is placed within it.

GLOSSARY OF ARCTIC TERMS.

Bay-ice, ice of recent formation, so called because forming most readily in bays and sheltered spots.

Berg (see *Iceberg*).

Beset, so enclosed by floating ice as to be unable to navigate.

Bight, an indentation.

Blasting, breaking the ice by gunpowder introduced in canisters.

Blink (see *Ice blink*).

Bore, to force through loose or recent ice by sails or steam.

Brash, ice broken up into small fragments.

Calf, detached masses from berg or glacier, rising suddenly to the surface.

Crow's nest, a look-out place attached to the top-gallant-masthead.

Dock, an opening in the ice, artificial or natural, offering protection.

Drift-ice, detached ice in motion.

Field-ice, an extensive surface of floating ice.

Fiord, an abrupt opening in the coast-line, admitting the sea.

Fire-hole, a well dug in the ice as a safeguard in case of fire.

Floe, a detached portion of a field.

Glacier, a mass of ice derived from the atmosphere, sometimes abutting upon the sea.

Hummocks, ridges of broken ice formed by collision of fields.

Ice-anchor, a hook or grapnel adapted to take hold upon ice.

Ice-belt, a continued margin of ice, which in high northern latitudes adheres to the coast above the ordinary level of the sea.

Ice-berg, a large floating mass of ice detached from a glacier.

Ice-blink, a peculiar appearance of the atmosphere over distant ice.

Ice-chisel, a long chisel for cutting holes in ice.

Ice-face, the abutting face of the ice-belt.

Ice-foot, the Danish name for the limited ice-belt of the more southern coast.

Ice-hook, a small ice-anchor.

Ice-raft, ice, whether field, floe, or detached belt, transporting foreign matter.

Ice-table, a flat surface of ice.

Land-ice, floes or fields adhering to the coast, or included between headlands.
Lane or *lead*, a navigable opening in the ice.

Nip, the condition of a vessel pressed upon by the ice on both sides.

Old ice, ice of more than a season's growth.

Pack, a large area of floating ices driven together more or less closely.

Polynia, a Russian term for an open-water space.

Rue-raddy, a shoulder-belt to drag by.

Tide-hole, a well sunk in the ice for the purpose of observing tides.

Tracking, towing along a margin of ice.

Water-sky, a peculiar appearance of the sky over open water.

Young ice, ice formed before the setting in of winter; recent ice.

headlands.

ly.